IRON & COAL

ESTABLISHED 1862

THE IRON AND COAL TRADES' REVIEW

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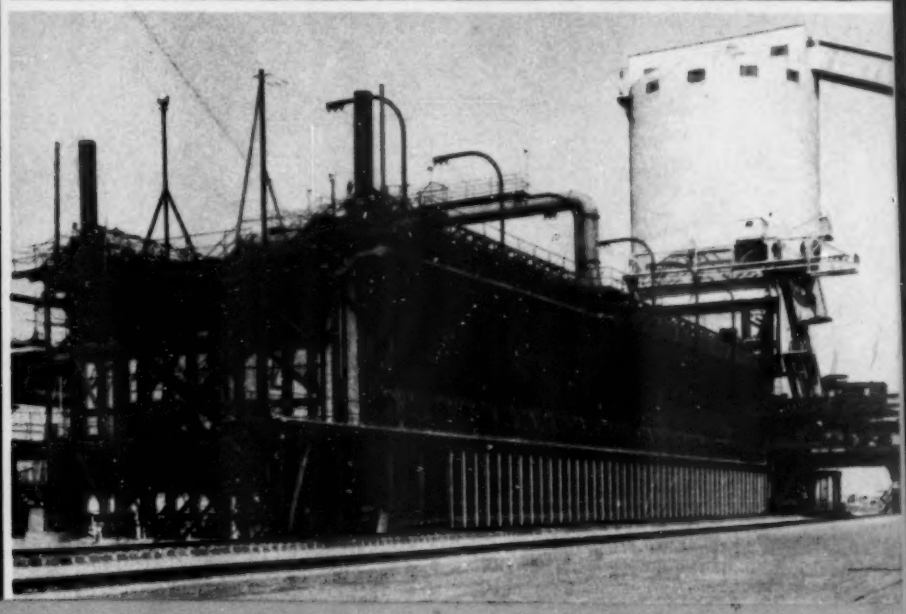
now in operation at

THE DEENE COKING PLANT CORBY



The commissioning of the new Deene Coking Plant at Corby marks the completion of the first stage in the coke oven development programme planned for Corby by Stewarts and Lloyds Limited.

The new installation comprises a battery of 51 Woodall-Duckham Becker coke ovens with a coal carbonising capacity of 1120 tons a day, a by-products recovery plant and extensive plants for coal handling and blending and coke handling, screening and storage. This is the sixth W-D coking installation to be built at Corby for Stewarts and Lloyds Limited.

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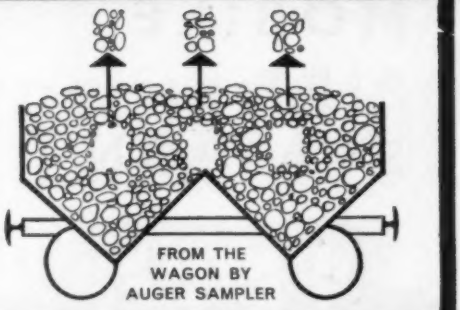

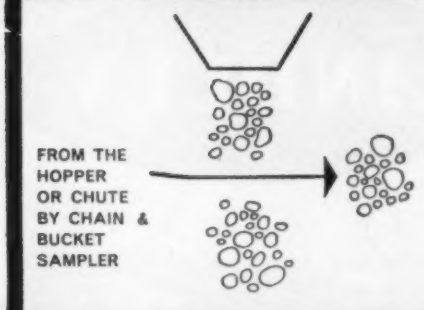

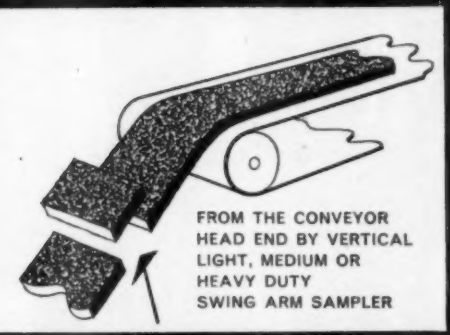

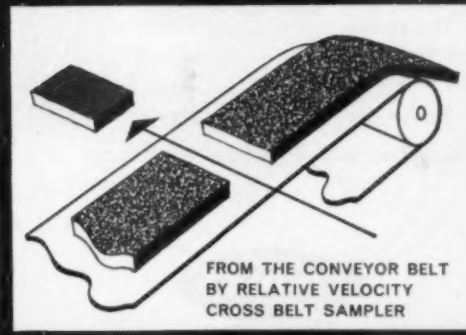

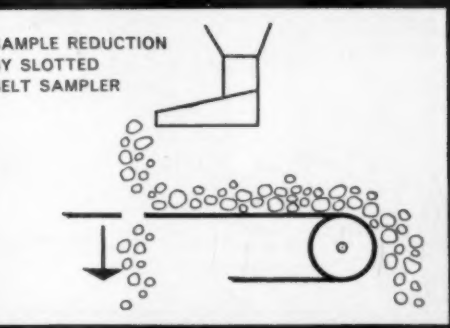

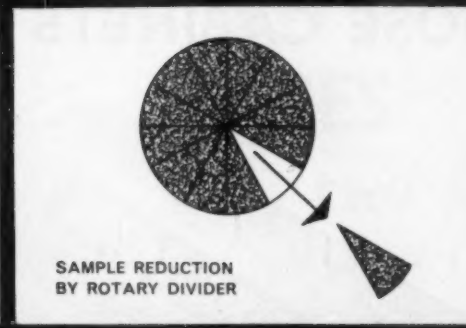

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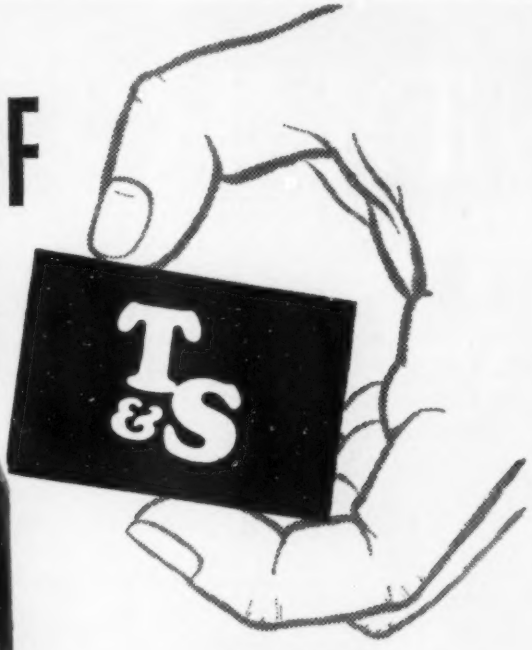

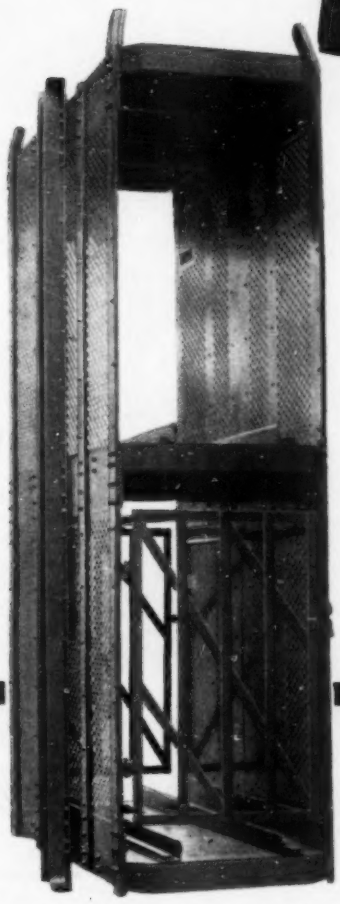

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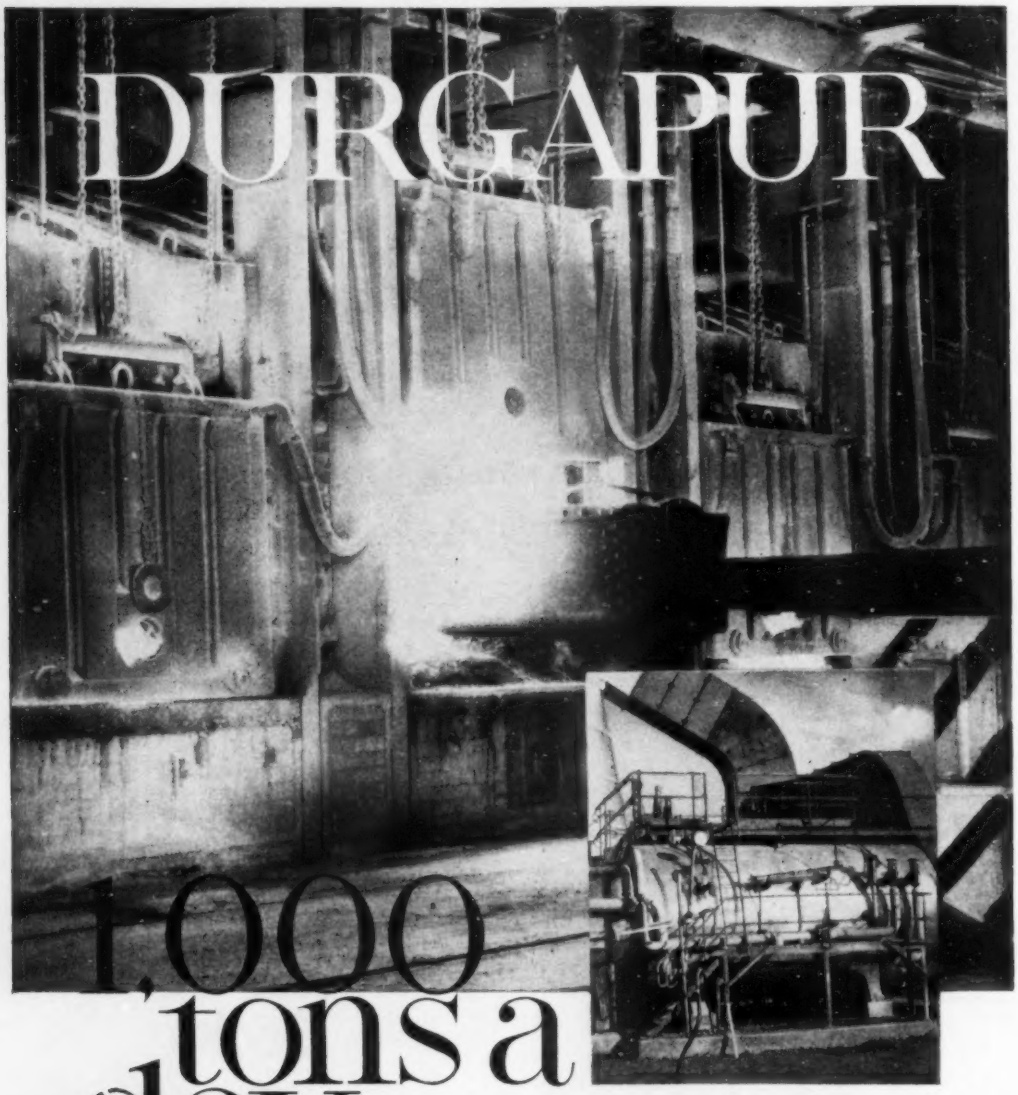

1,000 tons a day

but not only of steel. This is also the amount of steam generated by S-B-C waste heat boilers at Durgapur. The Spencer Bonecourt boiler shown above, inset, and six others like it, produces from 10,000 to 20,000 lbs of steam per hour—at 200 lbs per sq. in. S-B-C waste heat boilers were chosen by The Wellman Smith Owen Engineering Corporation Ltd., to operate in conjunction with their 200 ton open hearth melting furnaces for Indian Steelworks Construction Co. Ltd.

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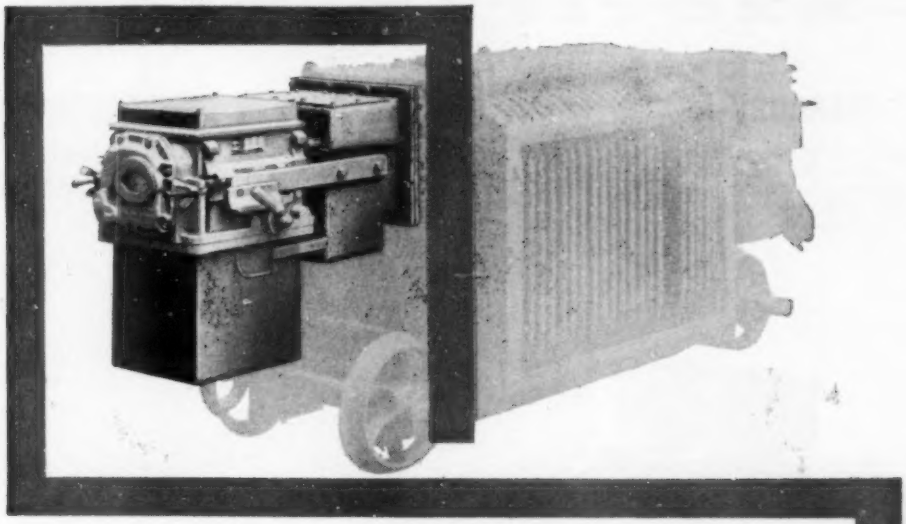

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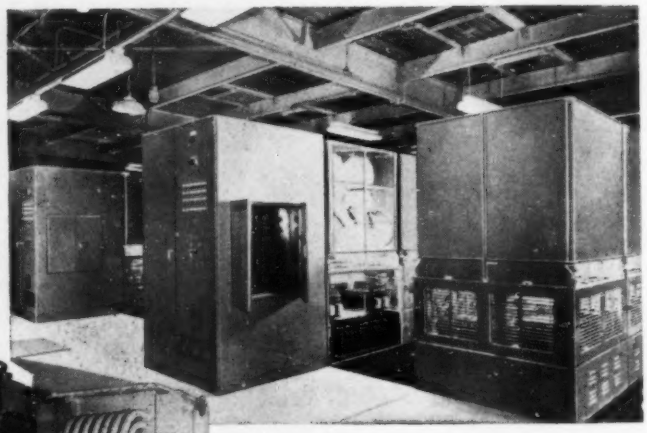

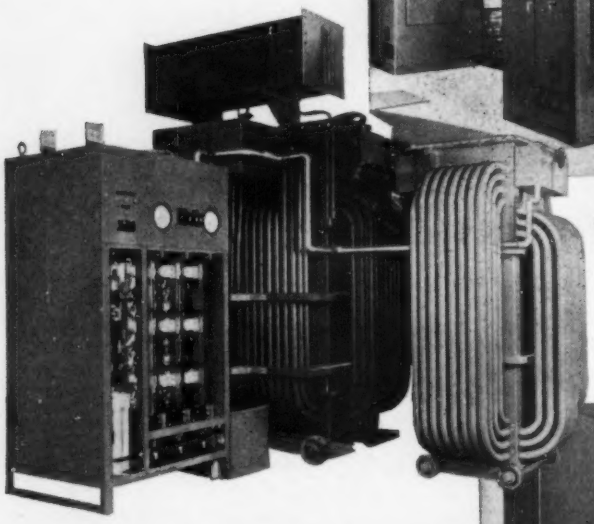

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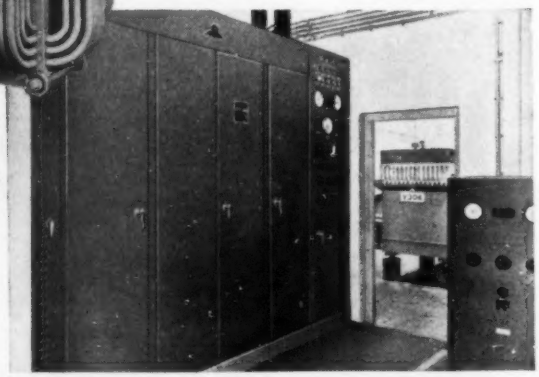

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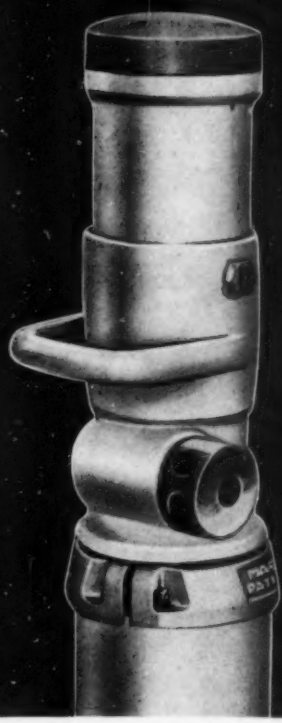

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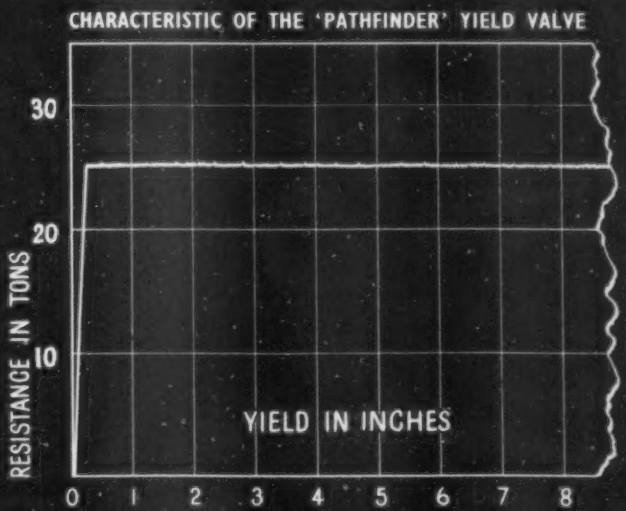

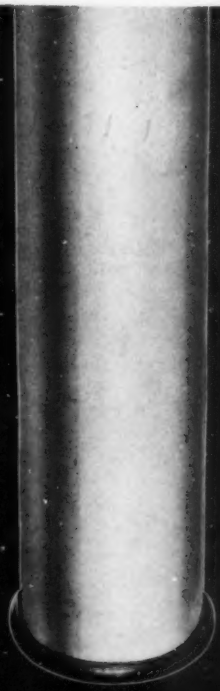

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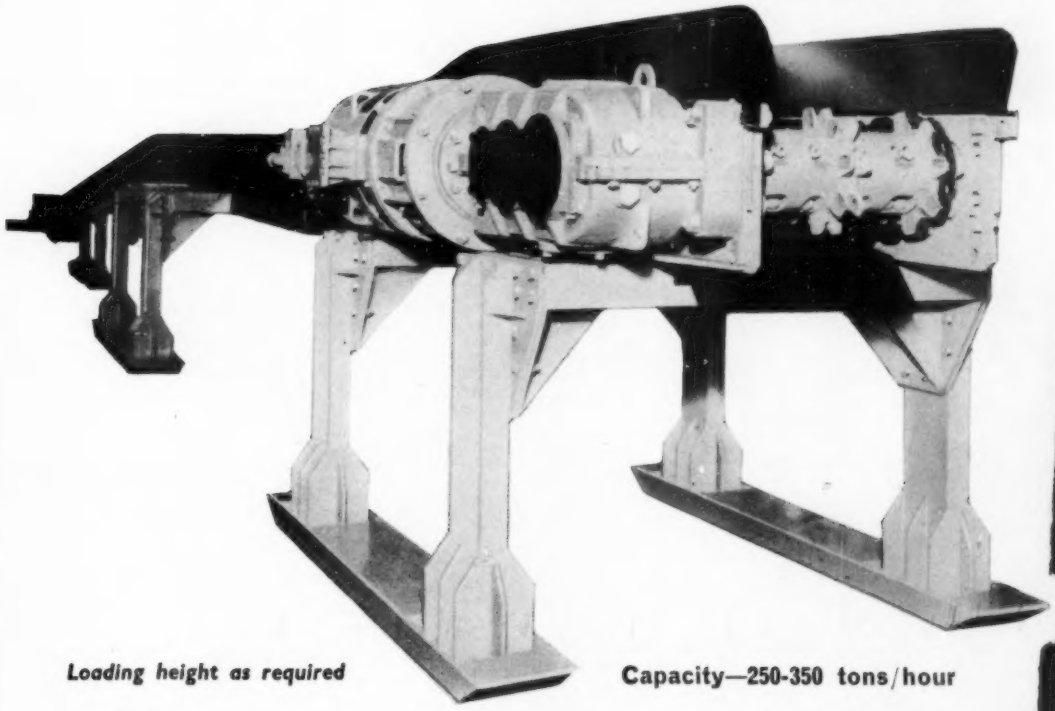

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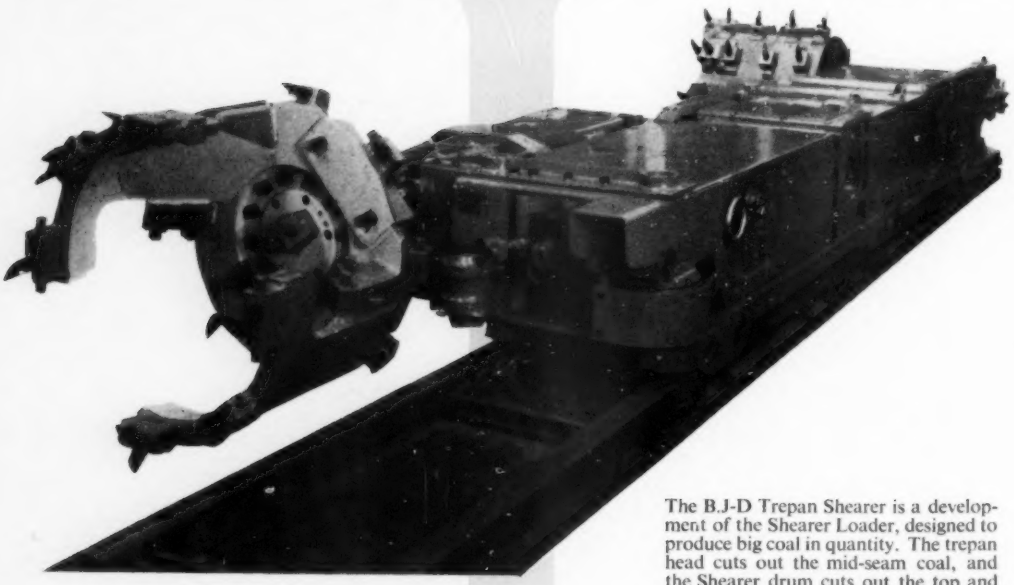

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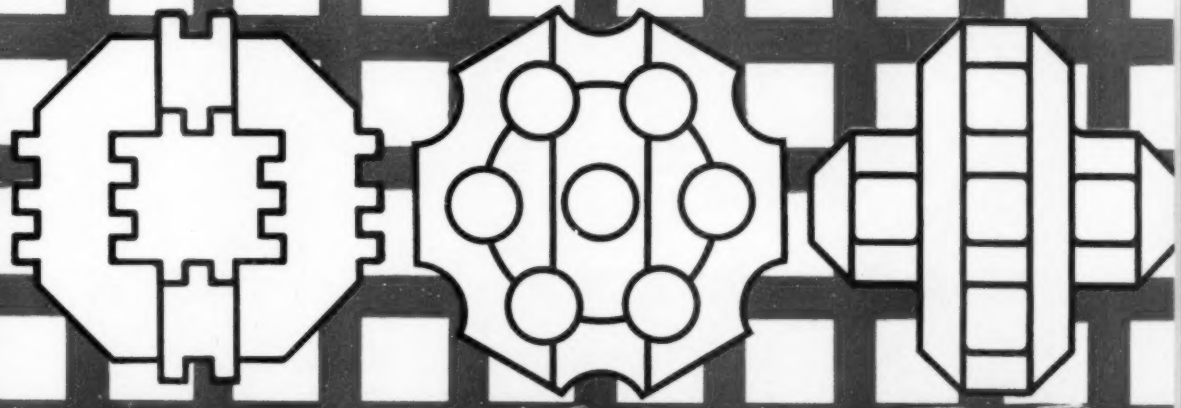

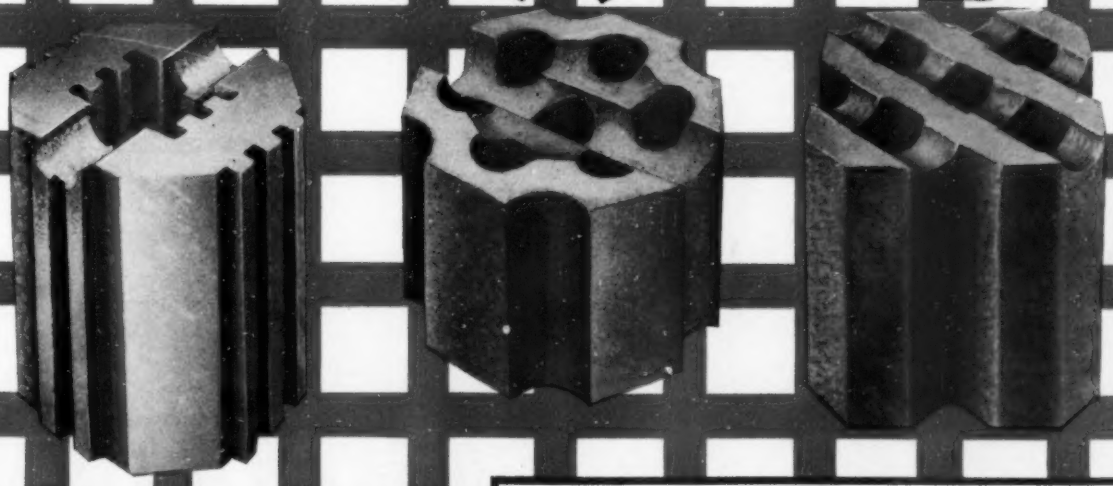

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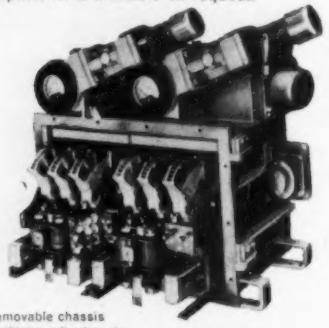

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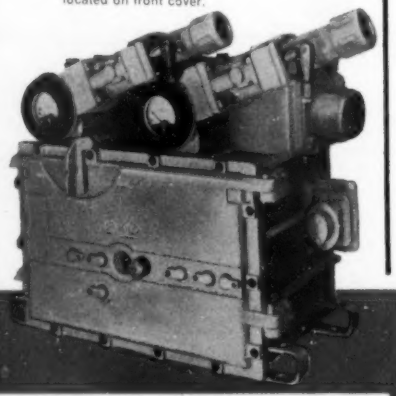

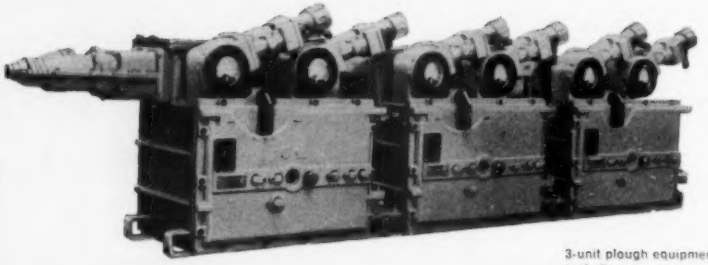

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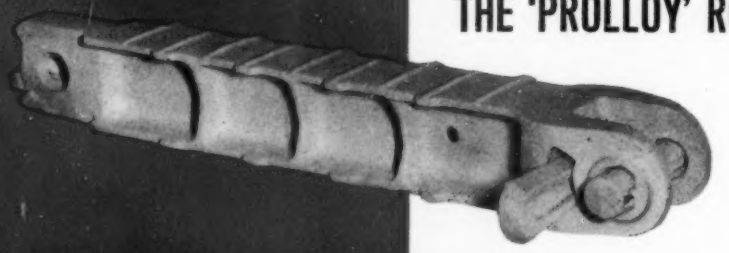

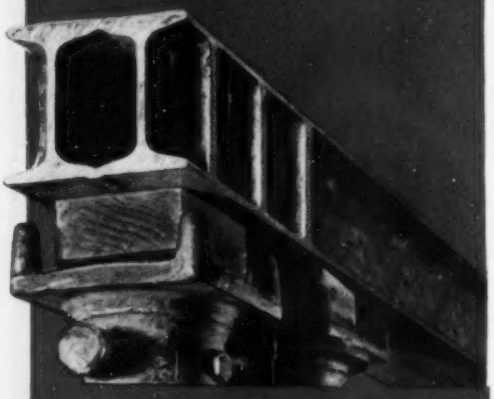

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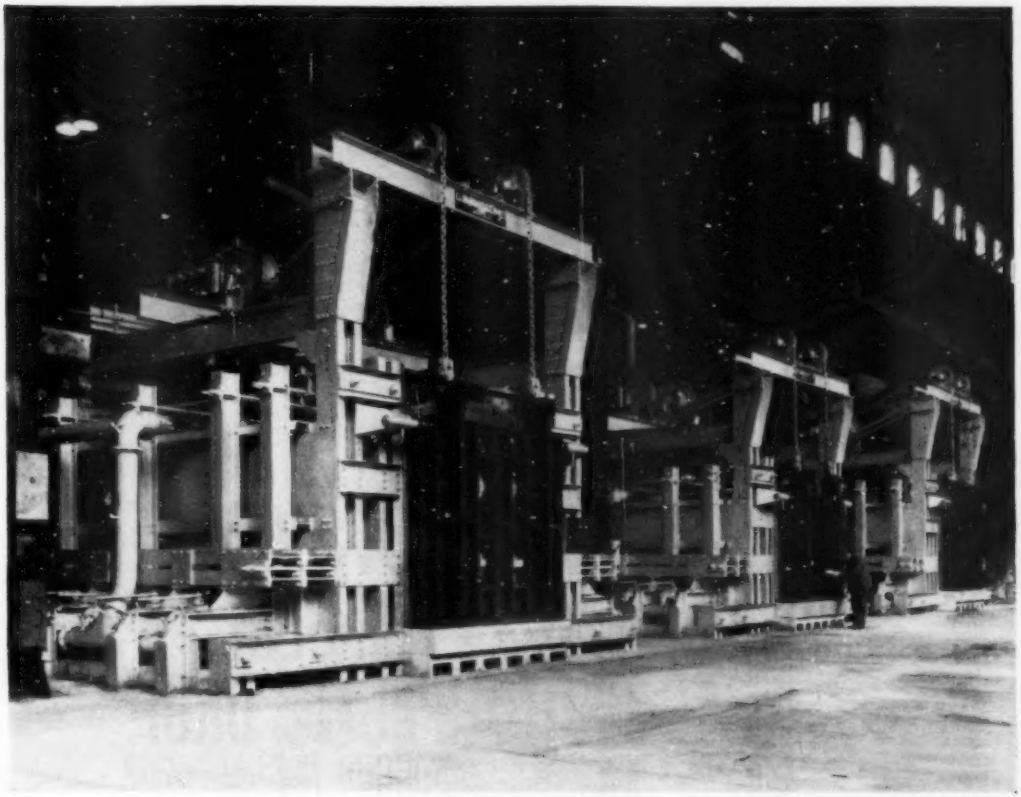

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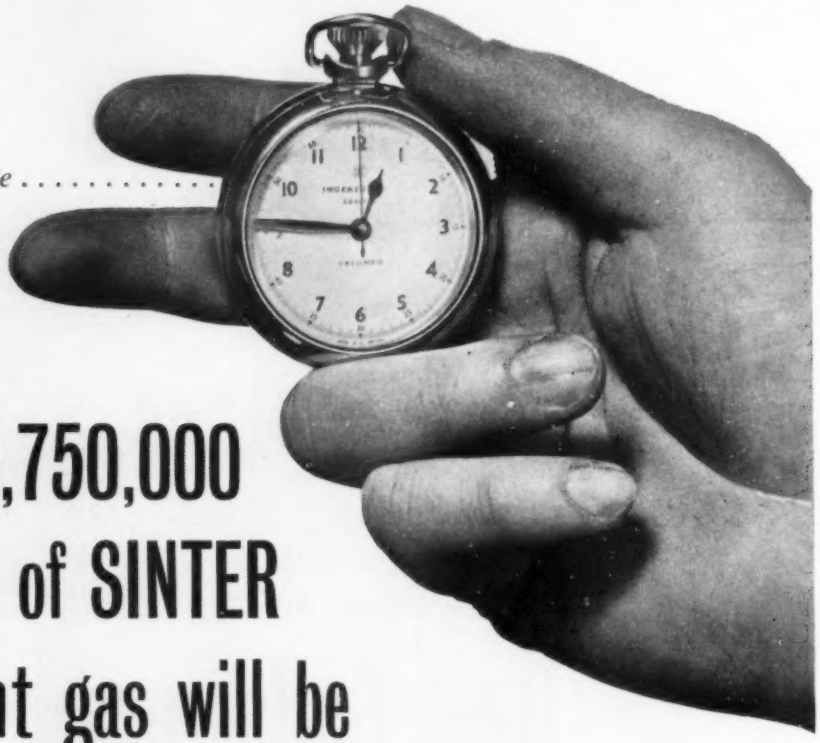

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and 3,750,000 cu. ft. of SINTER plant gas will be cleaned by our precipitators

Every minute a total of three and three quarter million cubic feet of gas (at operating temperature) will be treated in the twenty-nine sinter plant precipitator units designed, installed and on order from Lodge-Cottrell and Simon-Carves, both here and overseas. Efficiencies of well over 99% are being achieved and of course, all guarantees have been met. Other advantages of Lodge-Cottrell precipitators include negligible pressure loss, low operating cost, no abrasion and no water consumption. The dust is precipitated in a dry state, suitable for pelletising and feeding back on to the sinter strand. Another member company of Simon Engineering Ltd, Huntington, Heberlein and Co Ltd, specialises in sinter plant design and installation. Because of our association, integrated contracts for complete sinter and dust collection plant can be carried out.

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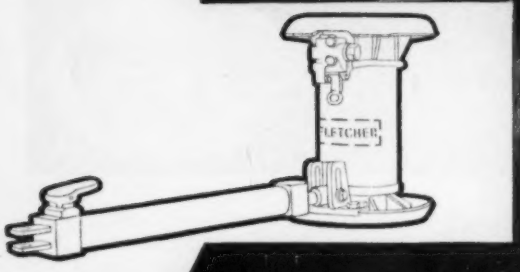
FLETCHER DESFORD CHOCKS

in action



Photograph by courtesy NCB

Following successful installations in the East Midlands Division, the Fletcher Desford hydraulic chock has gained a reputation for reliability.

50 and 100 ton versions: 6″ to 18″ stroke at 2″ intervals.

Fully approved by N.C.B —H.15 and H.11.

Ancillary equipment by Fletcher includes:

double-acting hydraulic ram up to 2′-6″ stroke

detachable ram anchor brackets

extension pieces 6″ & 12″

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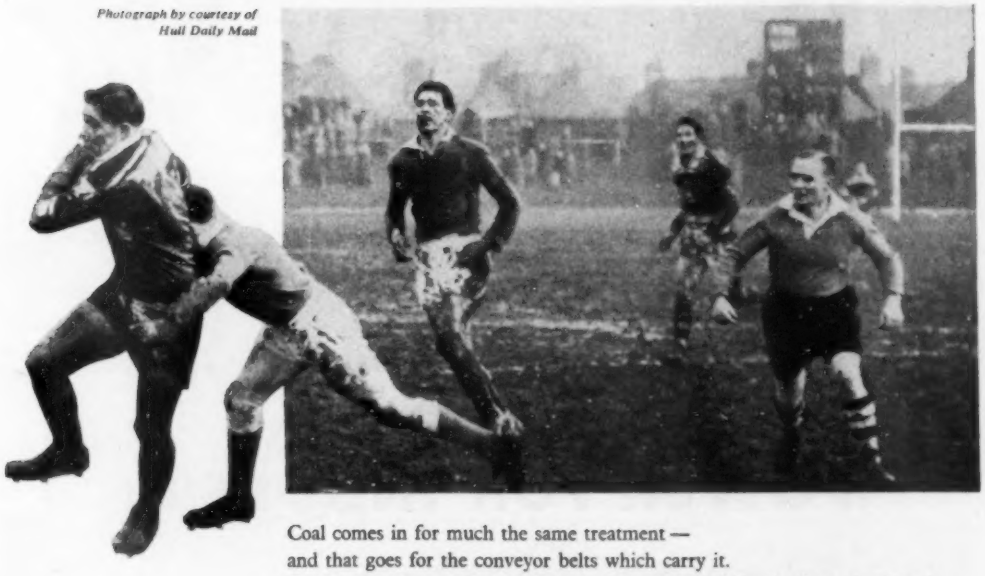
ROUGH TOUGH HANDLING...

Rough, tough handling — that's the way they treat 'em in Rugby League.
There's no quarter given, and none asked,
but this does not deter stars like Great Britain's John Whiteley
from giving consistent, top-class performance.

Photograph by courtesy of Hull Daily Mail



Coal comes in for much the same treatment —
and that goes for the conveyor belts which carry it.
That's why the new Fenner Diamond range of belting has been developed:
to stand up to the never-ending scrimmages of colliery life:
to maintain vital handling movements and to score
production points even under the wettest conditions.

Fenaplast

DIAMOND TYPE COLLIERY CONVEYOR BELTING

A PRODUCT OF

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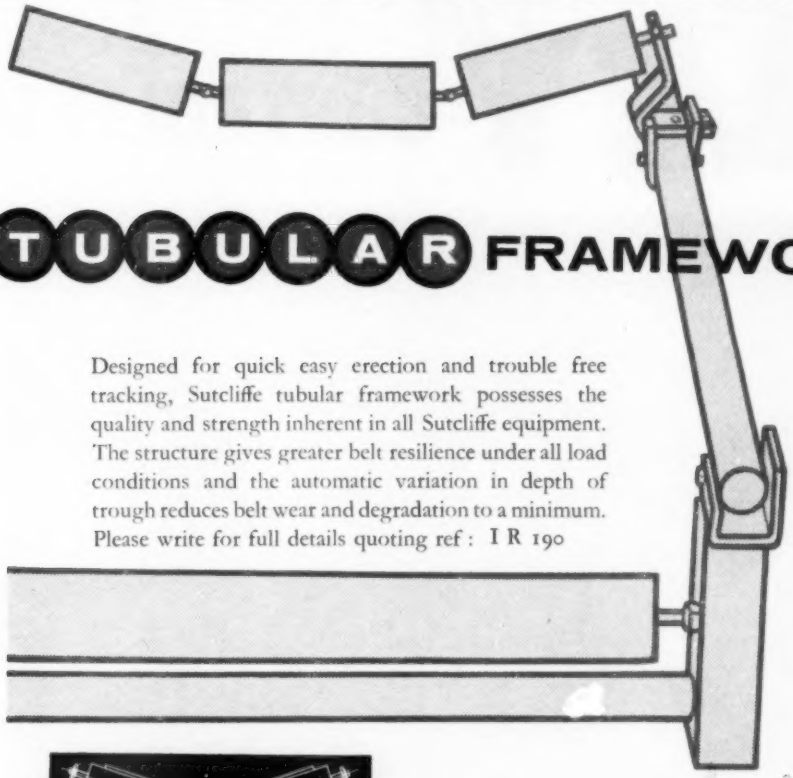

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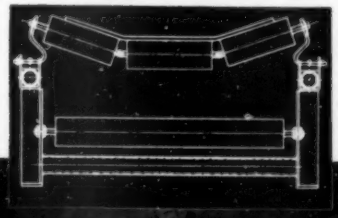
Designed for quick easy erection and trouble free tracking, Sutcliffe tubular framework possesses the quality and strength inherent in all Sutcliffe equipment. The structure gives greater belt resilience under all load conditions and the automatic variation in depth of trough reduces belt wear and degradation to a minimum. Please write for full details quoting ref : I R 190



Left: Typical cross-section through framework.

Below: The conveyor in operation underground.
(Photograph by courtesy of N.C.B. Durham Division).

Britain's Best Conveyors

RICHARD SUTCLIFFE LTD. HORBURY WAKEFIELD

dm RS190

2

ISLEY CONTROLLED

78 PITS NOW OPERATING AT HOME AND ABROAD

RECENT FULLY AUTOMATIC INSTALLATIONS INCLUDE
24 PITS IN S. WALES
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- PERFECTLY UNIFORM HEATING BOTTOM AND TOP OF INGOT.
- EXTREMELY SIMPLE CONTROL.
- SUITABLE FOR FIRING WITH PRODUCER, BLAST FURNACE OR MIXED GAS.
- ISLEY SOAKING PITS WILL HEAT COLD INGOTS TO OVER 1300° C. USING STRAIGHT BLAST FURNACE GAS WITH ABSOLUTELY NO PREHEAT OF GAS.
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INBYE BUNKERING

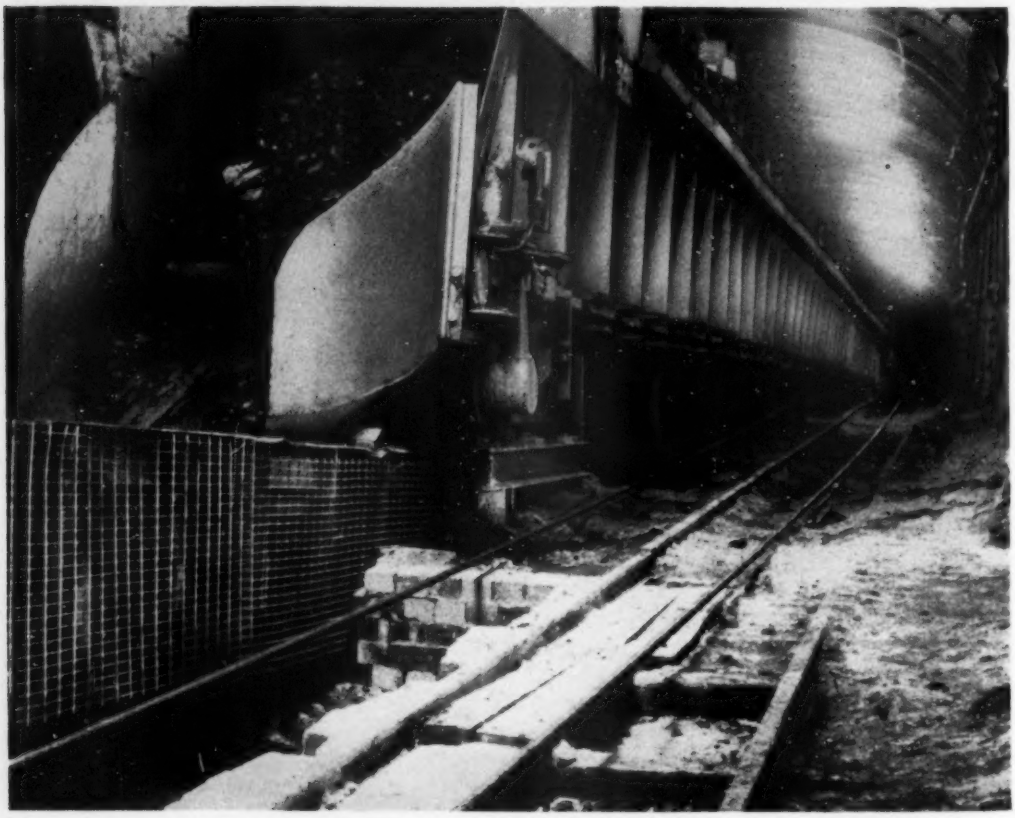

Photo by courtesy of N.C.B. **A COWLISHAW WALKER BUNKER INSTALLATION AT A COLLIERY IN THE WEST MIDLANDS**

The picture clearly shows the cushion of small coal down which the lumps flow with minimum degradation

A suitably placed bunker allows coal production on the face to proceed uninterruptedly in spite of minor transport stoppages outbye.

Method study has shown that an efficient bunker can iron out such stoppages which in total may represent as much as 15% of the working shift. The obvious place to locate the bunker is as near the coalface as possible and so the COWLISHAW, WALKER BUNKER CONVEYOR has been expressly designed for inbye application. It is compact, simple and particularly easy to operate. The gate or trunk belt may feed the bunker in line with the bunker axis as shown in the photograph or from the side.

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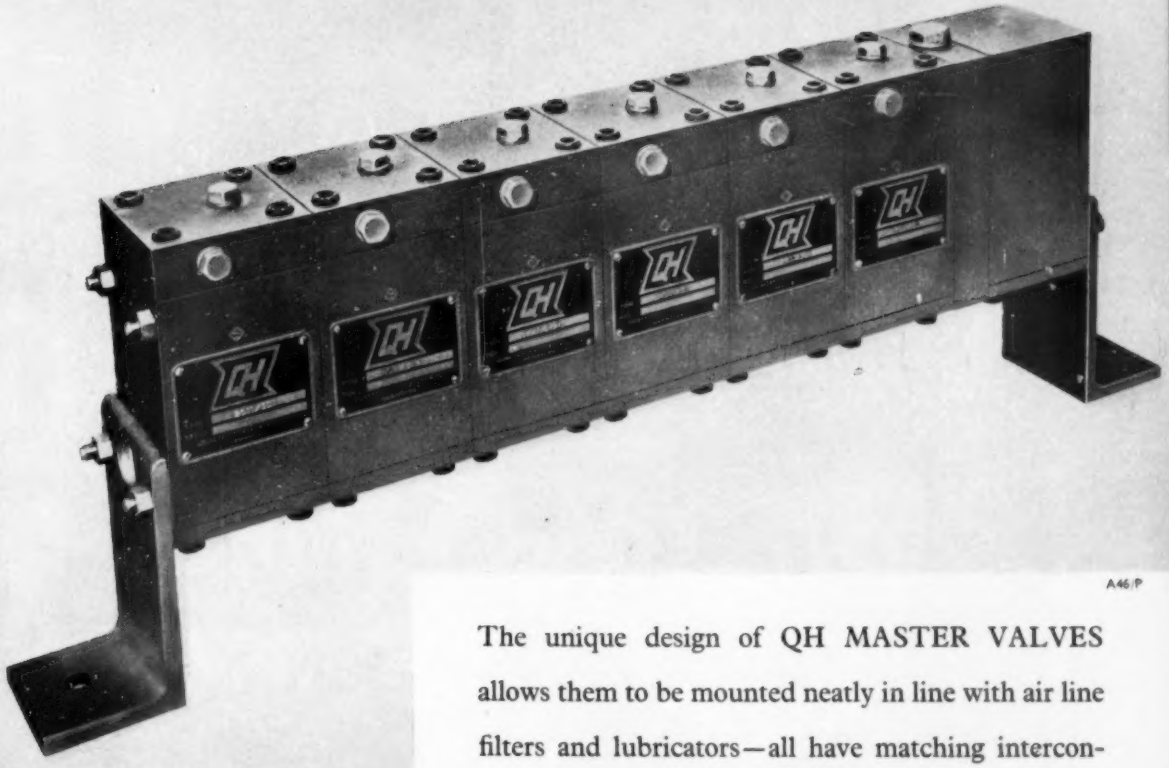
your valve panels can be as neat as this



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The unique design of QH MASTER VALVES allows them to be mounted neatly in line with air line filters and lubricators—all have matching interconnecting pilot and main air ports.

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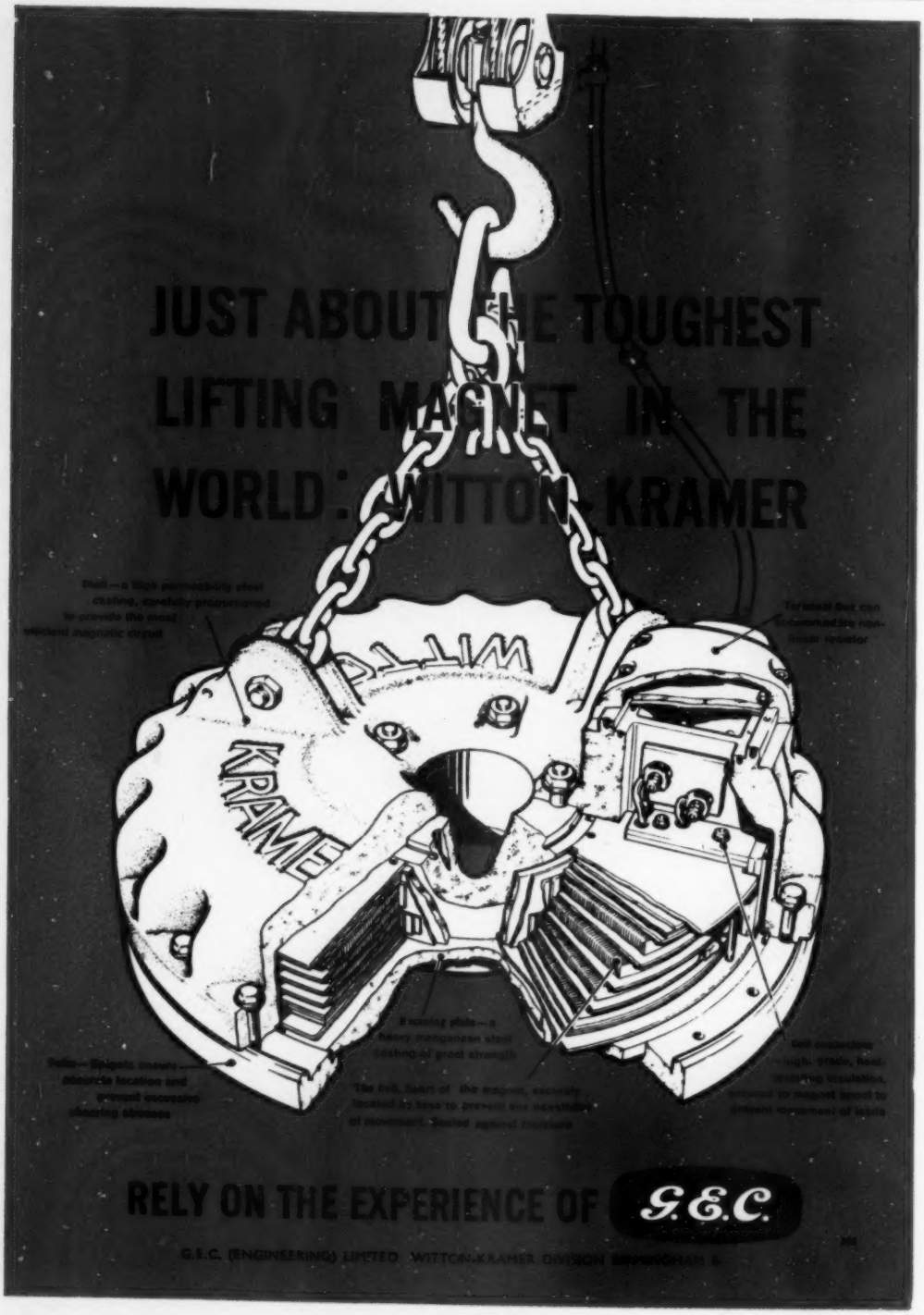
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OF HIGH TENSILE

SYNTHETIC FIBRE

FLAME RESISTANT

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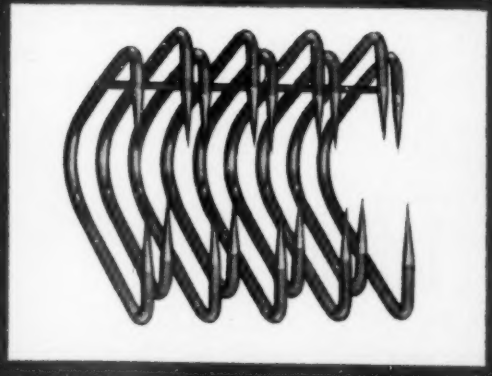
USE

COMET FASTENERS

AND MAKE SURE



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COLLIERY CONVEYOR BELT LACING SYSTEM

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CHURCH BANK WORKS, CHURCH, LANCASHIRE
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With the Hanmade Anti-breakage Storage Bunker haulage breakdowns, derailment or shaft hold-ups need not stop production. Normally coal can proceed "straight through" but in the case of bottle necks out-bye of the bunker, production can be turned into the Bunker and unloaded later in the shift.
Advantages?
Greater flexibility of output, less coal degradation and increased production.

Requires only one man to operate.

Developed in conjunction with the Mechanization Dept. of Area 1 East Midlands Division of the National Coal Board.

hanmade anti-breakage storage bunker

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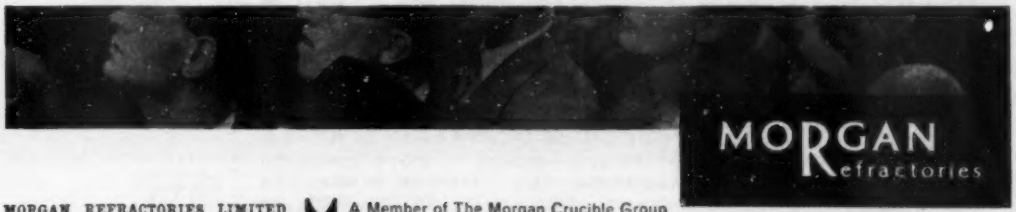
The "Queen Victoria" blast furnace at Appleby-Frodingham has produced 1,500,000 tons of iron—with the original MR2 stack lining. Operation continues.

United Steel's "Queen Victoria" blast furnace goes on beating records—month after month. In 1960 it became the first British blast furnace operating with 100% sinter burden to produce over 1 million tons of iron. The campaign has continued, and on September 24th, 1961 the output reached 1½ million tons—***with the stack lining of MR2 bricks, manufactured by MORGAN REFRACTORIES LIMITED still in excellent condition.*** Other relevant figures:—The campaign has lasted 177 weeks, during which period "Queen Victoria" has been charged with 3.87 million tons of sinter containing approx. 37% iron, 62,000 tons of scrap and 1.23 million tons of coke which represents 16.36 cwt. of coke per ton of iron. 26 cwt. of slag is tapped for each ton of metal produced, so the liquid throughput of the furnace has been 3.45 million tons.



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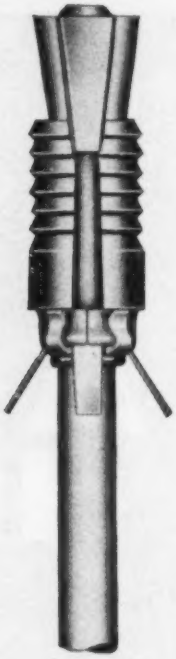
CUT COSTS

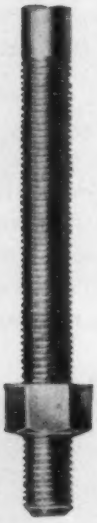
WITH BJB ROOF BOLTS



Much faster to install than less modern types of roof support, BJB Roof Bolts can cut support costs by up to 30%. Forged from high-strength steel (min. breaking strength for ¾" bolt 15 tons) BJB Roof Bolts have an unequalled safety-in-service record. Well over a million are already hard at work supporting the roofs of mines and tunnels all over the country.

Contact our Head Office for the address of your nearest BJB specialist engineer. He'll be glad to advise you on how BJB Roof Bolts can help solve your particular roof support problem.

NOTE: Our engineer will also tell you about the new Bayliss Link Stilt for your arches. Easy to install, it provides a smooth yielding action and can be used over and over again.



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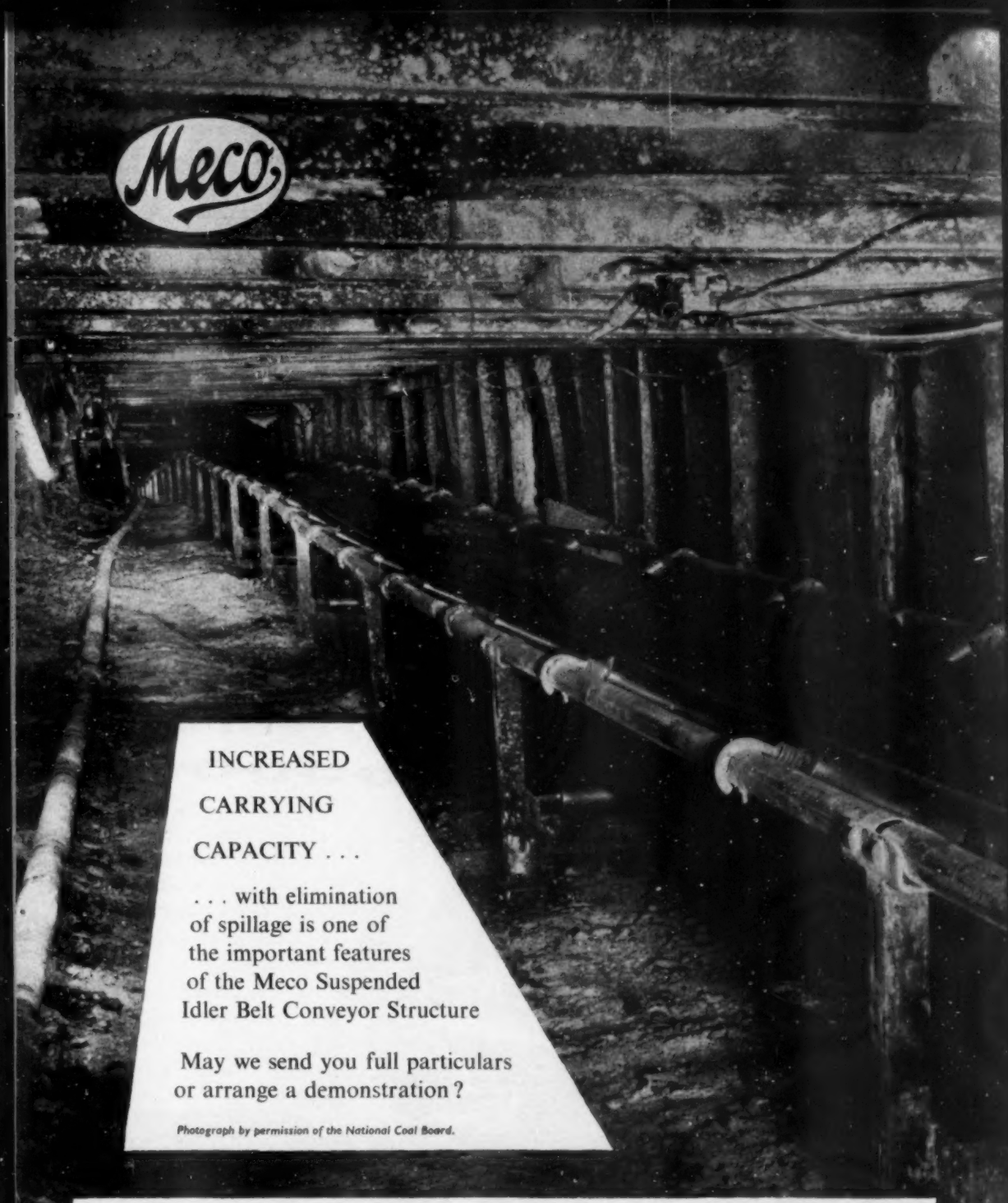

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CONVERSION FROM GRABBING MACHINE TO LIFTING CRANE WITH HOOK ACCOMPLISHED IN MINUTES.

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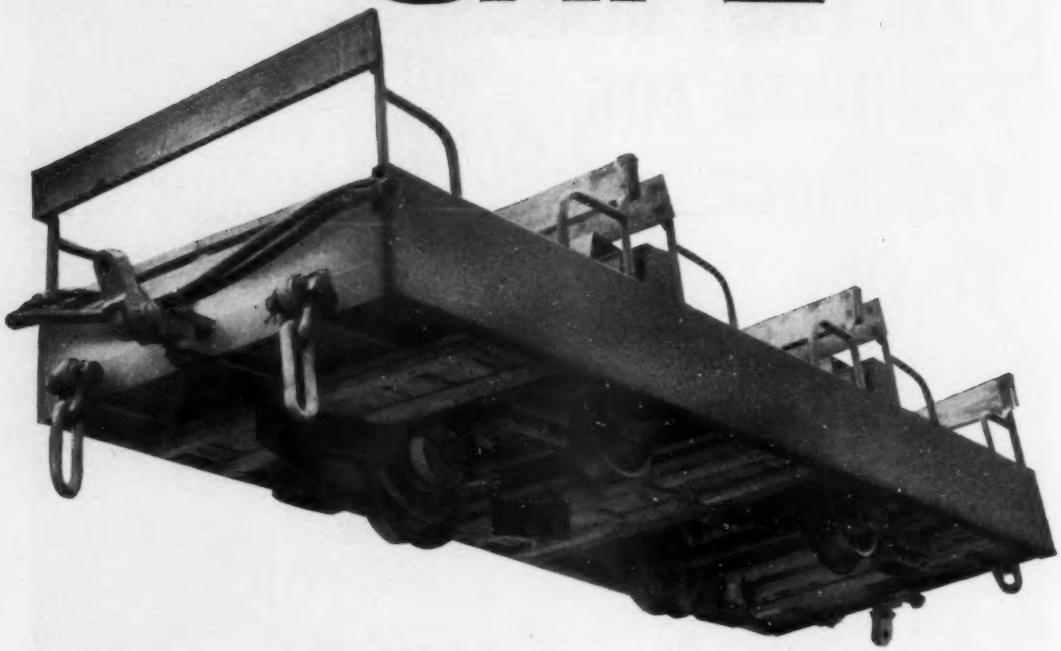

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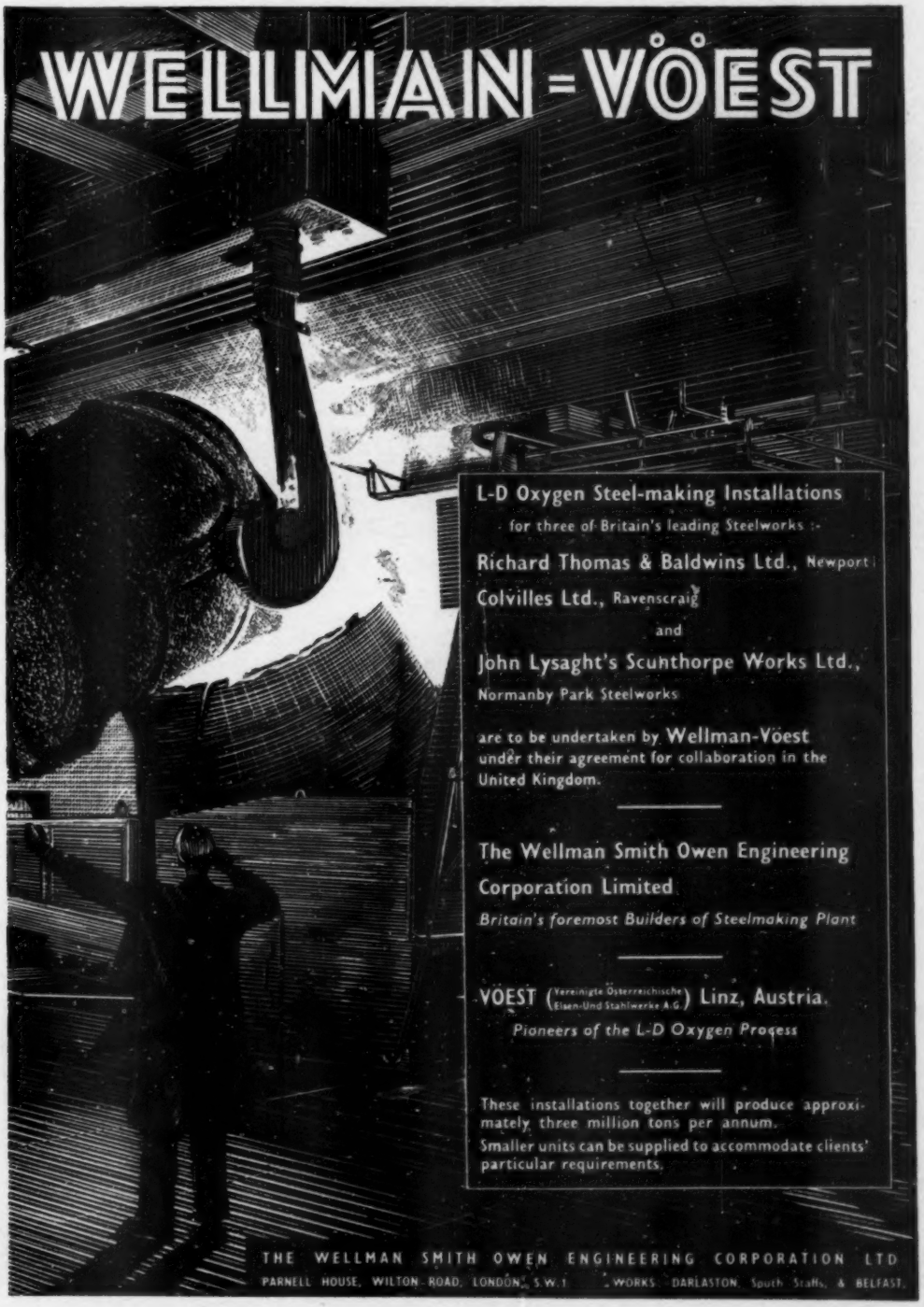
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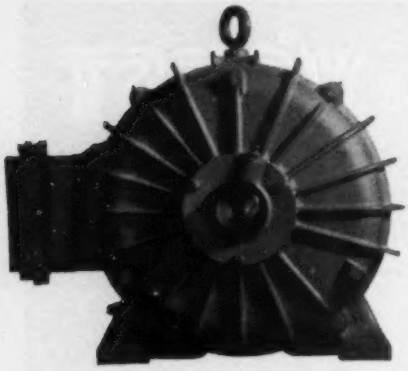
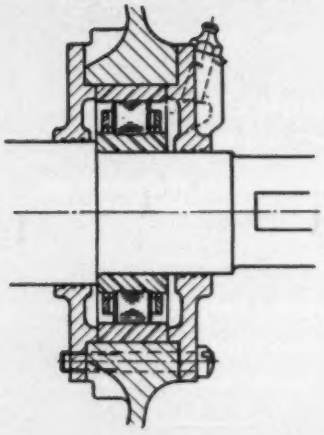


Engineers use the word performance in two senses, a limited one which refers to parameters that can be specified and checked; and a wider, vaguer, but essentially more realistic sense which covers freedom from trouble, ease of servicing, adaptability and many other things. Performance in the first sense is reproducible by any competent manufacturer; it depends on designing to well established principles. Performance in the second sense is the basis of choice between manufacturers. It comes from countless small differences in design that are based on know-how or experience.

This thing called know-how



Take for example bearings. We were amongst the first manufacturers to fit ball and roller bearings to electric motors and, in fact, they were standard equipment on our machines whilst the majority of motors still had sleeve bearings. The ubiquity of ball and roller bearings on motors today indicates how right this early choice was. There is a small but important detail in which the housings of the bearings on our motors differ from those on many others. We bore the end-shield clean through and fit two caps. The through bore allows of more accurate gauging—particularly with regard to parallelism—than a blind hole and the cost of the extra cap is in our opinion more than justified by this and by the better grease retention it makes possible.

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ML Loader & T.C.R. Props.

"Stands to reason," said the practical man, "the better the supports, the better the results obtained, whether you use a Huwood ML/6 or ML/7. Look at it this way—the secret of good ML loading is good face preparation and you can't expect to get really good face preparation unless your roof is properly controlled. That's why I say that T.C.R. Props are a 'natural' with ML loaders. They just naturally go together."

"*Like 'Romeo and Juliet', for instance—or, possibly, 'Huwood and Efficiency'?*"

"I agree to *that*, anyway—but what about 'steak and onions'? Actually, of course, T.C.R. props are a natural with any loader you care to mention."

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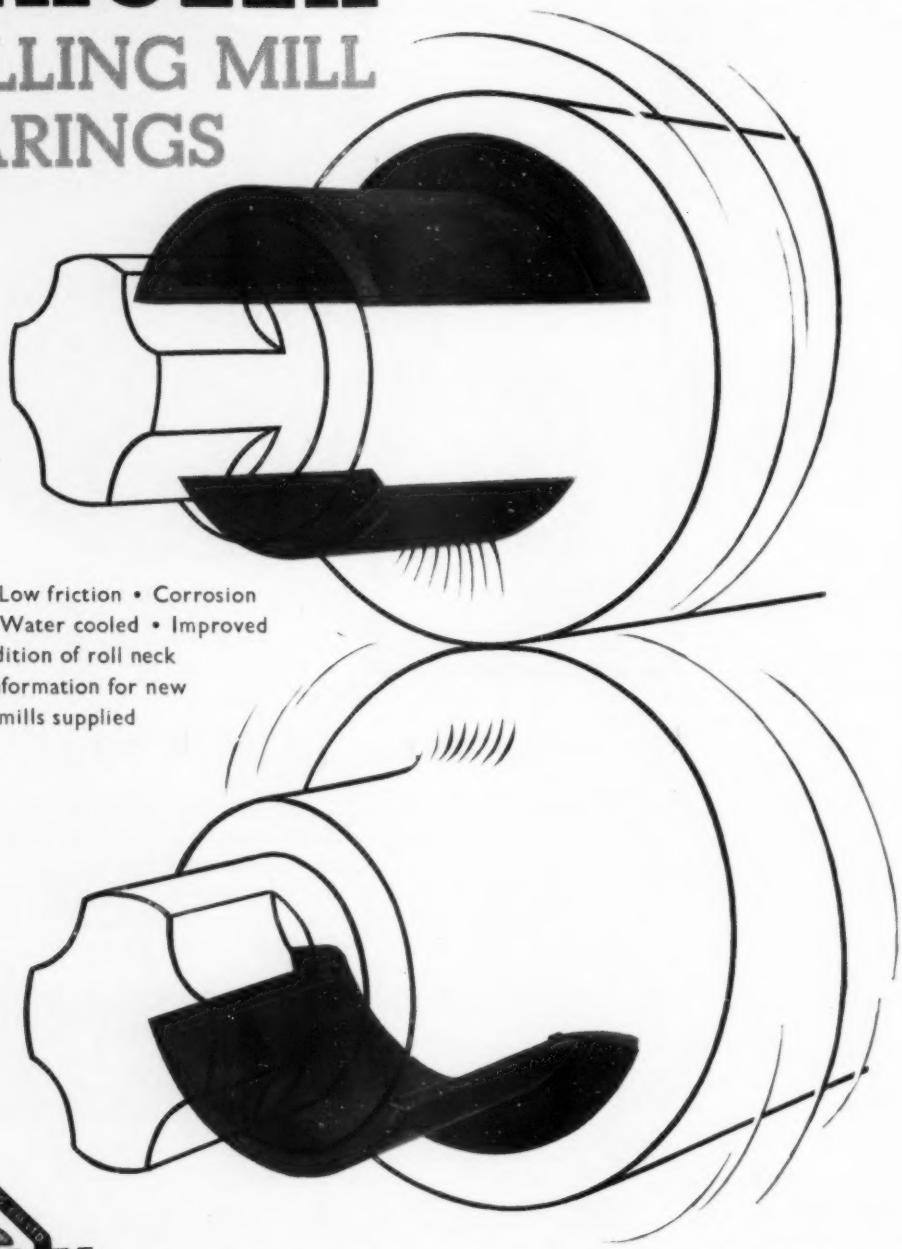
ROLLING MILL BEARINGS



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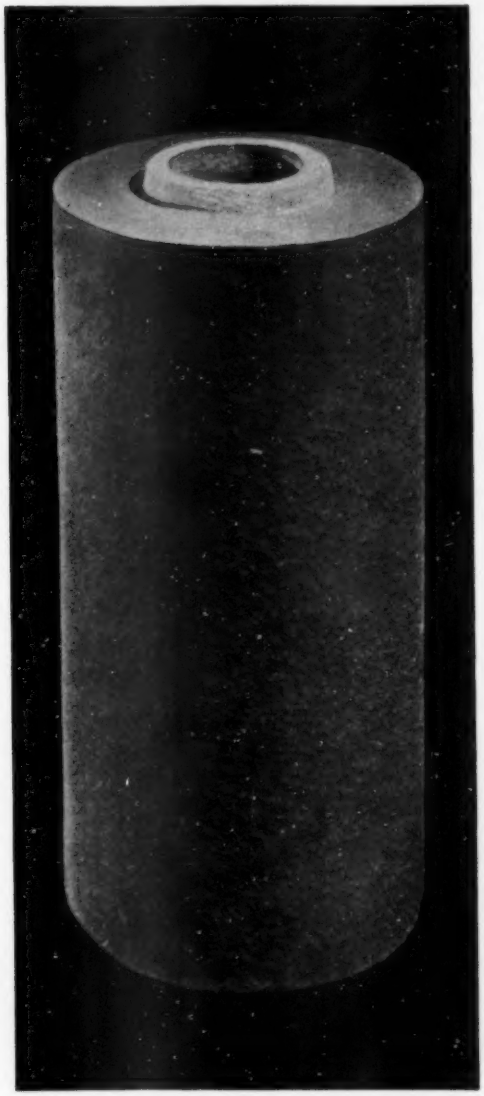

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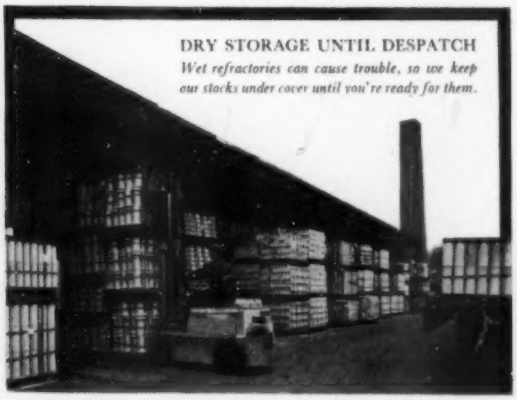
Just the kind of products you'd expect from a firm which pioneered the manufacture of casting pit refractories, and which still specialises in this field.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Wet refractories can cause trouble, so we keep our stocks under cover until you're ready for them.

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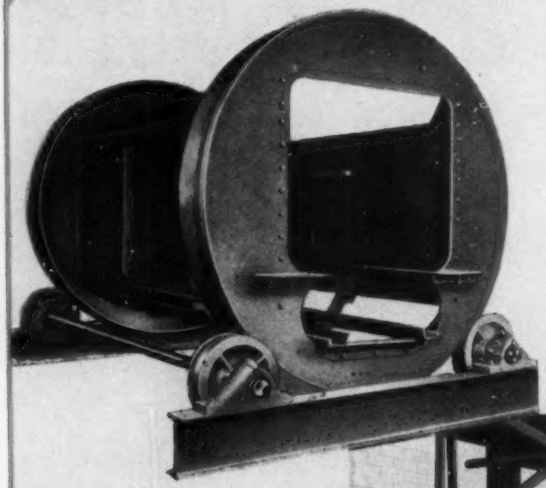

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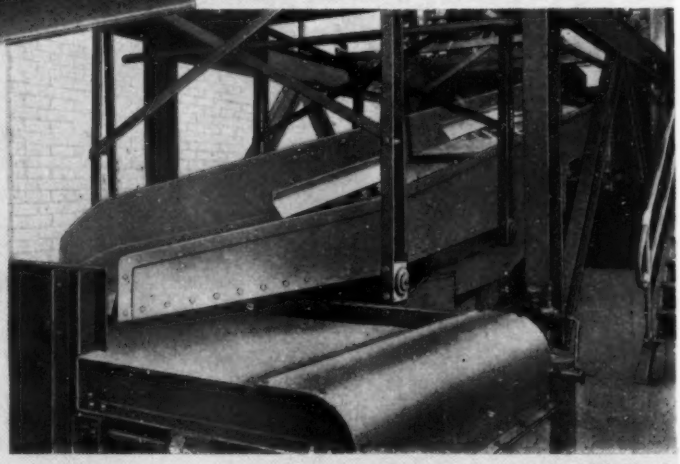

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THE IRON AND COAL TRADES' REVIEW

NOVEMBER 17, 1961

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IRON & COAL
THE IRON AND COAL TRADES REVIEW

Vol. 183 November 17, 1961 No. 4,870

Coal and the Economy

WITH much of the speech of Mr. S. P. Chambers, chairman of Imperial Chemical Industries, Limited, at the annual conference of the Institute of Directors, one must agree. It provides food for thought and debate, but, like the curate's egg, it is not the tastier because it is good in parts. In the comparatively short time since he succeeded Lord Fleck as chairman of ICI, Mr. Chambers has won a deservedly high reputation as a hard-headed, hard-hitting critic of what is now popularly termed "the Establishment." We are with him all the way when he "has a go" at the broader conceptions of "British industry," "British exports," and the "British economy." He is a man to be listened to, and if a sock is pulled up here, a sleeve rolled up there, and the odd shoulder applied to the wheel as a result of what he has said, then it is all to the good.

If he were to devote his manifold abilities to a careful and equally thought-provoking criticism of one particular facet of any of those broad conceptions of the British way of life, marshalling all the relevant facts and deducing his opinions and findings, then we would listen to him with as great if not greater interest. It is when he sandwiches an attack on one particular body that we take issue with him. In this case it is the National Coal Board. His speech was sufficiently strong, compelling, and forthright to need no whipping boy. Having made not several, but many excellent points it seems purposeless to slip in a comment that "the policy of shutting down uneconomic mines has, until recently, been much too slow."

The way in which the Coal Board has closed down pits that were uneconomic or approaching the point of exhaustion with remarkably few social consequences has won admiration from every part of the world where coal mining takes place. To embark on a wholesale closing down of pits certainly would achieve a reduction in the price of coal, but it would also bring disaster to dozens of mining communities. It may be argued that the social consequences of pit closures are not the NCB's business, but that of the Government. That is possibly so, but the outcry which is being made in the House of Commons on the proposals to close a relatively few pits in Scotland is sufficient evidence of how the Government, Parliament, and the people would respond to a decision to shut every pit in the country which does not make a profit. To say that prices are held at their present level in order to enable uneconomic mines to be financed by the surplus is to oversimplify the position. Even in argument, the extensive and intricate administration and development of the coal industry cannot be reduced to the level of the penny notebook.

Miners out of work and mining communities deprived of sustenance could not be left to fend for themselves. Caring for them is a responsibility which would have to be assumed by the nation if it were shed by the National Coal Board. The price of coal might be reduced, but it does not follow that the total burden of costs on private industry would be permanently lightened. Apart from resettling displaced miners, the "profitable" pits could not satisfy the demand, and coal or its equivalent would have to be brought in from abroad.

In his address Mr. Chambers laid down nine conditions for British survival:—A sound non-inflationary Budget; the subjection of capital expenditure in national industries to the tests of economic soundness which they would have to pass if privately owned; elimination of subsidies designed to keep alive inefficient and dying sections of private industry; withdrawal of protection or subsidies based upon sentimental and political expediency; recasting of the tax system "to clean it of the jungle of complexities and gimmicks which have added millions to administrative costs"; a reduction of taxation which penalizes initiative and enterprise; pressure to get international agreement to the revaluation of gold to increase international liquidity; entry into the Common Market "to help in the task of blowing away the cobwebs of inefficiency and restrictive practices" and to give the more efficient sections of British industry the chance of increasing their exports; and coupling this freeing of trade with effective measures to deal with the menace of dumping at prices below the home prices of producers.

To these nine points where no concrete examples are given we can nod our heads in sage approval, applaud the generalities, respond to the thrust of the sweeping accusation, and bask in the glow of well-formed phrases. It is a different matter to single out one nationalized industry for attack before an audience of several thousand influential directors and industrialists. It does less than justice to the painstaking and sincere efforts, often in difficult and hampering conditions, that have gone towards the goal of an efficient and profitable coal industry—an industry that has the

goodwill of its customers and the welfare of its workpeople very much at heart.

The problem of non-profitable pits is perhaps the most serious of the many problems that confront the NCB today. It is a pressing problem. It is being tackled, but it cannot be solved overnight, or by the Coal Board alone. A private company operating a non-profitable factory would close it down once the owner was convinced that it could never again pay its way. The NCB cannot act as quickly or as ruthlessly when it comes to shutting down pits. It can be instructed by the public that nationalized the coal industry to operate in future on strict commercial lines, which might mean that coal would be cheaper, but would also mean that many mining areas would be made derelict. The nation cannot have it both ways. If it calls the tune it will have to pay the piper.

Get Back to "British and Best"

"IT is quality and design that can draw us ahead of our competitors. Despite production economies there is unlikely to be any significant difference between the price structure of British and Common Market products and so the significance of quality is obvious," said Sir Bertram Waring on Monday. Sir Bertram, who is chairman and managing director of Joseph Lucas (Industries), Limited, and chairman of the British Productivity Council, was speaking at the opening of a three day conference "Efficiency in Today's Factory," which has been organized by the Council in conjunction with the Engineering Materials and Design Exhibition at Earls Court, London. They had to get back to "British and best" which was accepted without question throughout the world until nearly a quarter of a century ago, he maintained.

Organizing for the achievement of product quality was the theme of a paper read by Mr. Frank Nixon, chief quality engineer of the aero engine division of Rolls-Royce, Limited. The right approach to product quality was to make it the business of everyone from the managing director down to those on the shop floor, he said.

"Grey elephants of British industry" was how Dr. James Risk, director of Risk & Partners, the former controller of the Brush Group, Limited, described machines not fully utilized, whether through shortage of skilled labour, demand for the products, or because, in some cases, the machine should never have been bought.

Sir James Hutchison, president of the Association of British Chambers of Commerce and a member of the British Productivity Council, who emphasized the need for competitive prices, said the question of UK manufacturing costs was one of the most important ingredients in a successful attack on the Common Market, if and when Britain entered.

FROM NOVEMBER 25 the personnel and public relations division of Richard Thomas & Baldwins, Limited, will be located at RTB House, 151, Gower Street, London, W.C.1 (telephone: EUSton 9333).

Passing Thoughts . . .

IT is a pity that the phrase "both sides of industry" is so often used or misused, even in the highest quarters. In truth, we are all in the same boat—management and employees—just as literally as the captain, officers, and crew of a ship at sea. One hopes that the worn out "class war" theory of Victorian days will be relegated to the obscurity that it now deserves.—MARQUESS OF EXETER, chairman of Birmid Industries, Limited.

> *A top executive should ensure that he is known throughout his organization. While he cannot know thousands of men himself they must know him, at least by sight.*—FIELD MARSHAL VISCOUNT SLIM, *speaking to the British Institute of Management.*

The bigger firms trot out very limited [research] schemes for a Minister's commendation. The smaller firms say they cannot afford it and trundle along, hawking their obsolescent technology through a fast-dwindling sellers' market.—LORD HAILSHAM, Minister of Science, in the Fawley Lecture.

> *This "sandwich" device establishes a close liaison between a man's industrial employers and his college . . . it is something we ought to consider in the States.*—MR. JESSE J. DEFOE, *Associate Professor of the Southern Technical Institute, Marietta, Georgia, USA, who is visiting West Riding industrial concerns.*

Our present Establishment cannot run industry. They are trained to run an empire. The people on whom the country will depend are the professional managers of industry and it is from these people that I would like to see the country able to draw first local and then national leaders.—MR. J. D. PEARSON, chief executive and deputy chairman of Rolls-Royce, Limited, addressing a meeting organized by the North-east Region of the British Institute of Management.

> *It is especially dangerous for any organization as large and complex as the whole of British industry to go porpoising along the baseline, drifting in and out of trouble. The Government must provide the economic climate which urges, encourages, if necessary forces, improvements.*—DR. R. BEECHING, *chairman of the British Transport Commission.*

If coal is to come nearer to paying its way and to earning a reasonable rate of return on its capital, and if it is to compete with other fuels, there will almost certainly have to be more drastic closures of submarginal pits and a more flexible pricing policy. It is difficult to explain the wide variations in productivity and profitability between different coalfields entirely in terms of geology or history.—Financial Times.

> *Saturday working will be some repayment to the NCB for the good turn it did the industry by retaining the five-day week during the slump of a few years ago when millions of tons of coal were being stockpiled.*—MR. FRANK SMITH, *secretary of the Leicestershire Area of the National Union of Mineworkers.*

At every stage planning for coal has been as much political as economic, and politically it is far easier to base plans on optimistic hopes than to devise realistic schemes for the re-employment of redundant miners.—The Guardian.

UK NEEDS MASS MARKETS

TI Chairman Supports Union with Europe

WITH Britain being overtaken by other countries in production, exports, and rate of progress, the Government is right in seeking admission to the Common Market, believes Sir Ivan A. R. Stedeford, chairman of Tube Investments, Limited. Britain's need for larger markets, he says, in his annual review, is imperative. "We require scope for mass production and specialization. We must look for partners absorbed, as Britain is, in technical progress, and we must associate with other advanced industrial countries in sharing the burdens and fruits of research. In reality, these partners can only be found in Western Europe."

Simple membership of the Commonwealth, Sir Ivan goes on, does not of itself provide an alternate comparable economic system with the mass markets that are needed, especially when most countries of the Commonwealth are rapidly building up their own industries, need wider markets, and more capital than Britain alone can provide.

SIR IVAN STEDEFORD

Regarding entry into the Common Market, he says: "In the world of today, we virtually have no choice. It has become clear that the consolidation of an Atlantic Community lies now through Europe, not outside it." The economic revival of Western Europe since the war had proved the vitality of the region and the important part it could play in the world through its economic strength and political influence.

The Cost of Joining

Sir Ivan says that Europe might succeed in playing this part without Britain, but he would "prefer not to speculate" on what Britain's prospects would be if she stood aloof—whether the Common Market would succeed without us or, if, without us, it would fall apart under pressure of political discord.

"I do not underrate the initial cost of joining. What the effect will be as we dismantle our tariffs—some of the highest in the world—in concert with those of our chief competitors, the Germans, French, and Italians, no one can predict. But we can hardly doubt that against continental competition some manufacturing companies, if not entire industries, will have to transform themselves or go out of business."

The chairman says that for some time Tube Investments has been making plans on the assumption that Britain will join the Common Market. "We are not dismayed at the effects this is bound to have on us all. We look upon Britain's joining as an opportunity and a challenge, which should eventually bring the greatest good to the greatest number in this country and in the Commonwealth."

Dealing with the past trading year, Sir Ivan says that in a climate of strong competition and in spite of a sharp recession in some important customer industries the steel tube division achieved yet another record in sales and earnings. World competition raged fiercely, but, apart from Soviet business, direct sales abroad increased by 25 per cent. In the engineering and general divisions, export orders advanced by about 17 per cent.

Although sales by the group's steel companies increased by over 15 per cent., margins narrowed unduly and overall earnings were down. The £31,000,000 development scheme at Park Gate Iron & Steel Company, Limited, would raise productive capacity there from 425,000 to 800,000 tons and give the steel division a total production potential of 1,300,000 tons a year, which would place Tube Investments among the most up-to-date and cheapest producers of steel in Europe.

Sir Ivan says that the estimated capital cost of the current development programme (excluding the aluminium companies) will be about £75,000,000, spread over the next five years or so. While substantial progress has been made on a number of important capital projects, the rate of expenditure will now accelerate, reaching its peak in about three years.

Firth Cleveland's New Plant for Wider Steel Strip

NEW line of hardening and tempering furnaces and ancillary plant has been brought into commission at the Tipton (Staffs) factory of Firth Cleveland Steel Strip, Limited, a member of the Firth Cleveland, Limited, group. This step increases the company's output of wide hardened and tempered steel strip by a third, most of which will go to the export market.

The company will now be able to supply hardened and tempered steel strip up to a maximum of 18 in. wide and 0.096 in. thick, compared with a previous maximum of 13 in. wide and 0.080 in. thick. This, it is claimed, makes it the only hardened and tempered steel strip company in the UK at present able to supply the material to such width. The new maximum width opens up a market for the supply of British hardened and tempered steel strip for the manufacture of wide bandsaw. Until now, this could only be obtained from Swedish suppliers, says the company.

The new hardening and tempering plant will be fed with cold rolled carbon and alloy steel strip of up to 18 in. in width by the associate company, J. J. Habershon & Sons, Limited, Rotherham.

Retires After 50 Years in Coal Mining

AFTER 50 years' service in the coal mining industry, Mr. Edric William Lane is retiring from the post of Area general manager of No. 1 (Worksop) Area, North-Eastern Divisional Coal Board, on December 1. He will be succeeded by Mr. John N. Booth, at present chief study engineer at NCB national headquarters.

MR. E. W. LANE

Mr. Lane joined the industry in 1911 as an articled pupil with the New Hucknall Colliery Company, Limited, near Mansfield. After war service he became assistant manager at Bentinck Colliery, and later served as manager of Ibstock, Charlaw, Sacriston, Shield Row, Cinderhill, Bulwell, and Bilsthorpe collieries, becoming agent of Bilsthorpe and Pleasley collieries in 1939. On nationalization he was appointed a deputy Area general manager in the East Midlands Division, and was promoted Area production manager of No. 3 (Edwinstowe) Area in 1948, and Area general manager of No. 1 (Manchester) Area, North-Western Division, in 1951. He has held his present post since 1956.

Mr. Booth, who gained a mining degree at Sheffield University, joined Newton, Chambers & Company, Limited, Thorncliffe, near Sheffield, as an apprentice mining engineer in 1931, later becoming ventilation engineer to the Hardwick Colliery Company, Limited, Chesterfield, and manager of Ramcroft Colliery in 1940. Since nationalization he has held the posts of agent, mining development engineer, and production manager of No. 1 Area, East Midlands Division. He became chief method study engineer at NCB headquarters in 1959.

RICS President Urges Minerals Review

IN his presidential address to the Royal Institution of Chartered Surveyors in London on Monday, Mr. E. C. Strathon called for a review of the long-term requirements of the mineral wealth of the country. "The extraction of minerals is as important to the country's economy as the development and redevelopment of our towns," he said. "Provision for winning and working was regarded as of the highest priority in the preparation of development plans, but in some extractive industries demand has exceeded supply."

Mr. Strathon thought that the work of mining surveyors was the least likely to be affected by the Government's decision to open negotiations with the European Economic Community. "It is a salutary fact," he said, "that the coal output of the National Coal Board is almost as large as that of the combined Common Market countries."

The death has occured of Mr. THOMAS JENKINS JONES, deputy at Lady Windsor Colliery, Ynysybwl (Glam).

Appointments

BISRA's New Steelmaking Laboratories' Chief

THE British Iron and Steel Research Association has appointed Mr. A. G. SHAKESPEARE as head of its steelmaking laboratories at the Sheffield Research Station. Mr. Shakespeare's previous appointment was in charge of the association's work on hot strip processing at the Sketty Hall laboratories, Swansea. He is 33.

He obtained a second class degree in metallurgy at Cambridge and after a year working on the heat-treatment of light alloys and precision casting techniques for Fairey Aviation, Limited, he joined the Nelson research laboratories of the English Electric Company, Limited, where his special interests were X-ray crystallography and high temperature "cermet" materials. He has been with BISRA since 1954 and has been engaged in research into the design and operation of strip processing plants, playing a notable part in the development of the association's new rapid continuous annealing process.

Mr. J. N. GIBBS and Mr. DONALD BRIDGES have been appointed sales representatives for the western region, for the Nuralite Company, Limited.

Mr. J. R. STUART has been appointed wire mill manager of Cables Mexicanos, SA, the associate company in Mexico of British Ropes, Limited, Doncaster.

Mr. BRIAN B. LEVERTON has been appointed manager of the railway traction department, Rolls-Royce, Limited, in succession to the late Mr. Bernard L. Moultrie.

A new sales representative, Mr. R. C. MILLER, has been appointed by Firth Cleveland Steel, Limited, Rotherham (Yorks), to take over responsibility for the north-east England sales territories of the company.

Mr. RONALD W. ABEL, who joined the company in 1958, has been appointed home sales manager of the steelbuilding division of Sanders & Forster, Limited, London, E.15, a member of the Chamberlain group of companies.

Three new senior appointments have been made at the Kidsgrove, Stoke-on-Trent, control gear division of the English Electric Company, Limited. They are:—Mr. F. E. WASPE to be chief development engineer, Mr. G. H. GUNNELL, chief control engineer, Mr. E. J. PEPPER, chief design engineer.

Mr. D. G. BOOTH has been appointed divisional general manager of the industrial hydraulic division of the Plessey Company, Limited, Swindon. Mr. Booth was associated with the division at its inception and he returns to it after two years as engineering executive of the Plessey Swindon region. He is also a director of Plessey Maschinen Elemente, GmbH, Düsseldorf, a wholly-owned subsidiary.

Stanley Works (G.B.), Limited, Sheffield, tool manufacturers, has appointed Mr. RONALD SHELTON, product designer, to head a new department responsible for the design and development of new products. Mr. ROBERT BRADLEY, formerly chief planning engineer, has been appointed manager of the engineering department. Mr. LAURENCE FORD, chief engineer, is leaving the company to take up a new appointment.

WORK HAS started on extensions to the Newburn (Northumberland) branch of K. & L. Steelfounders & Engineers, Limited, Letchworth (Herts).

US Coal Prospect

RISE IN ANNUAL DEMAND TO 670,000,000 TONS BY 1975

WHILE the United States coal industry must contend with serious problems for some time, it can expect larger markets as the nation's energy needs expand, and the demand in the US for coal should reach 670,000,000 tons by 1975, compared with about 434,000,000 tons produced in 1960, Mr. T. Reed Scollon, of the Department of the Interior's Bureau of Mines, said recently. Most of this increase would result from projected expansion of electric power generation, with a modest rise in demand also expected from the steel industry.

Mr. Scollon, who is chief of the Bureau's Division of Bituminous Coal, said this forecast was "primarily a projection of present trends affecting fuel consumption, including current technological developments," but with no assumptions for possible major changes in technology or other developments that might significantly alter coal's position in the years ahead.

To develop a realistic base for its estimate, the Bureau had assumed that the relationship of certain factors, such as production and consumption efficiencies and prices for different fuels, would remain relatively stable during the next 15 years.

Power Generation Needs

Coal was expected to provide the largest share of energy required in achieving an annual output of 1,772,000,000,000 kW.-hr. of electricity, which was the estimate recently adopted by the Federal Power Commission for 1975, and consumption for this purpose should reach some 440,000,000 tons a year, which was more than the current annual total cost production. Technological developments in some phases of electric power production, such as the coal-burning gas turbine, could greatly increase this estimate for coal, while other developments, such as nuclear-fusion processes, might tend to reduce the consumption of coal in power generation.

About 90,000,000 tons of coal would be needed for metallurgical coke, compared with 80,000,000 tons consumption for this purpose in 1960. The estimate was based on the assumption that steel output in 1957 would not exceed 150,000,000 tons—most estimates of steel production fell in the 140,000,000-195,000,000 tons range—and that the use of coke for other purposes would approximate at present levels.

In response to economic growth, population expansion, and new construction, coal requirements for cement manufacture were expected to increase from the 8,200,000 tons now consumed to about 11,000,000 tons. There should also be a relatively mild increase in coal consumption at steel and rolling mills from the present 7,300,000 tons to about 8,000,000 tons, reflecting to some extent rising demand for steel.

The outlook for coal in other segments of the industrial and manufacturing market, however, was less optimistic. The growing use of fuel oil in industrial fuel markets (process heat and steam), of distillate oils in industrial space-heating, and of natural gas in both these applications had been disastrous for coal, consumption having declined from 124,000,000 tons in 1947 to 76,000,000 tons in 1960. The rate of decline in this sector, however, was expected to reach its bottom limits within the next decade, and to be followed by a modest gain for coal, when coal consumption in the industrial fuel and industrial space heating categories should approximate 70,000,000 tons.

Despite the current declining trend in exports, the worldwide demand for exceptionally high-grade US coals, particularly metallurgical qualities, had been firmly established, and by 1976 this market was expected to stabilize at about 30,000,000 tons compared with 38,000,000 tons in 1960.

Productivity Records in NCB Divisions

OVERALL productivity in the West Midlands Division of the NCB exceeded 32 cwt. per manshift for the first time in the week ended November 4. The new figure, beating a week-old record by nearly 0.5 cwt., was 32.3 cwt. Coal face productivity also rose by nearly 1 cwt. to a new peak of 102.6 cwt. North Staffordshire Area and Cannock Chase set new overall records of 30.7 and 35.7 cwt., respectively.

In the North-Western Division of the NCB, overall productivity in the same week reached a new record of 28.3 cwt. per manshift. The coal face figure was also a record.

The Northern (N&C) Division also set up a record with an overall OMS of 29.5 cwt. South Northumberland Area achieved 30.7 cwt. and Cumberland a record of 24.2 cwt.

In the Durham Division OMS for the year so far averages 23.07 cwt., an increase of 0.94 cwt., compared with the same period last year. At the face, OMS reached 65.82 (64.51) cwt.

Minister of Power Welcomes Methane Imports

DELEGATES to the Gas Council's conference at Harrogate on Thursday of last week were told by the Minister of Power, Mr. Richard Wood, that the Government's decision to import liquid methane from the Sahara was "a most timely supplement" to the carbonizing and other established methods of gas making. He did not see it as a headlong retreat from the traditional coal-based structure of the industry.

It would be a great mistake to over-emphasize the revolutionary nature of the project—had it been revolutionary the Government most probably would not have approved it. However, he felt that the psychology of this new, modern technology could be enormous.

Personal

46 Years with AEI

CONSULTANT for the engineering department at the Wythenshawe Works of the transformer division of Associated Electrical Industries, Limited, Mr. Harold Diggle has retired after 46 years' service. He joined the British Westinghouse Company, Limited, in 1915, after graduating at Manchester College of Technology and became engineer in charge of transformer tests. He transferred to the transformer engineering department in 1917, and shortly afterwards was put in charge of transformer engineering development. He was appointed consultant in June, 1960.

For many years Mr. Diggle was a member of a number of BSI and BEAMA committees, including those for flameproof enclosures and high-voltage bushings, and he has been an active member of the Institution of Electrical Engineers for a very long period.

Mr. J. F. COALES, Cambridge University, has been elected a vice-president of the International Federation of Automatic Control.

Title of Reader in Geology has been conferred on Dr. J. E. PRENTICE in respect of his post at King's College, London University.

ASSISTANT GENERAL works superintendent for Dorman Long (Steel), Limited, Mr. C. MOODY has been elected president of the Cleveland Scientific and Technical Institute, Middlesbrough.

Chemical engineer in the engineering division's development department at the Thorncliffe works of Newton Chambers & Company, Limited, ironfounders and engineers, etc., of Thorncliffe, near Sheffield, Mr. D. BRADLEY has been awarded the prize for the best paper presented by an associate member in 1960-61, by the Coke Oven Managers' Association.

Chairman and managing director of John Readhead & Sons, Limited, shipbuilders and repairers, of South Shields, Mr. G. H. R. TOWERS has been co-opted a member of the Tyne Improvement Commission in succession to Mr. E. J. Hunter, chairman, of Swan, Hunter, & Wigham Richardson, Limited, who resigned last month owing to pressure of business.

Mr. NORMAN L. MOCHEL, chief metallurgist with the Westinghouse Electric Corporation, of America, has retired after 49 years' service with the Corporation. He has managed the metallurgical engineering activities of its steam division since 1920. A former president of the American Society for Testing and Materials, he plans to continue his profession in a consulting capacity.

Four metallurgists, Prof. A. G. QUARREL of Sheffield University, Prof. G. V. Rayner of Birmingham University, Prof. C. R. TOTTLE of Manchester University, and Prof. N. J. PETCH of Durham University (King's College, Newcastle), leave today (Friday) to spend a fortnight in the USSR to study the work of their Soviet opposite numbers. The visit has been arranged by the British Council under an exchange agreement which provides for four Soviet metallurgists to visit Britain between this year and 1963.

BRIG. A. LEVESLEY, a director of Edgar Allen & Company, Limited, has been appointed president of the Welded Tool Manufacturers' Export Association and of the Welded Tool Manufacturers' Association. He succeeds Mr. R. P. WALLACE, managing director of Jessop-Saville, Limited. Mr. B. H. CHAMBERS, manager, engineers' tool department, Edgar Allen, and a member of committees of the two associations, will be succeeded by Mr. V. W. OAKES at the end of this year on his retirement from the company.

Shipbuilding Employers' New President

CHAIRMAN of Joseph L. Thompson & Sons, Limited, and a director of a number of other Sunderland shipbuilding companies, Mr. R. Cyril Thompson has been elected president of the Shipbuilding Employers' Federation for the coming year in succession to Mr. John Rannie, shipyard director, John Brown & Company (Clydebank), Limited, Glasgow. New senior vice-president is Dr. Denis Rebbeck, deputy managing director of Harland & Wolff, Limited, Belfast, and other vice-presidents are:—Mr. Henry Robb, chairman and managing director of Henry Robb, Limited, Leith, and Mr. George Morrison, managing director of the Greenock Dockyard Company, Limited, Greenock.

Mr. Thomas McIver, a director and general manager of Swan, Hunter, & Wigham Richardson, Limited, is new chairman of the Conference and Works Board of the federation, and Mr. Thomas Parnell, a director and shipyard manager of the Caledon Shipbuilding & Engineering Company, Limited, Dundee, vice-chairman.

Purchasing Officers' Course in Scotland

AT the Scottish senior buyers' course arranged by the Purchasing Officers Association, to be held in Stirling on November 23 and 24, papers to be presented will include "Scottish Transport Problems," by Mr. K. A. Henderson, transport manager, purchasing department, Monsanto Chemicals, Limited; "Variety Reduction," by Mr. D. E. Butcher, standards engineer, Joseph Lucas, Limited; and "Purchasing Management," by Mr. J. Murray Grammer, executive vice-president of the association, and director-general, purchasing and stores, National Coal Board.

The Scottish regional conference of the association will be held the following day, when the guest of honour at the luncheon will be Mr. J. C. George, Parliamentary Secretary, Ministry of Power. The programme will include a "Purchasing Brains Trust," a member of which will be Mr. J. Cameron, production controller, Pressed Steel Company, Limited.

DR. BEECHING ON FACTORY IMPROVEMENT

OPENING the International Factory Equipment Exhibition at Earls Court, London, on Monday, Dr. Richard Beeching, chairman of the British Transport Commission, said he was tempted to say that the present economic crisis and the Chancellor's "pause" made the exhibition of even greater interest than usual, but this ought not to be so. "Good management will not want to be forced. They will be anxious to improve their factories at all times . . . to make them not only more productive, but more pleasant and safer places to work in."

The exhibition, which covers a wide field of industrial equipment from air cleaners and packaging machines to welding equipment and pumps, continues until tomorrow (Saturday).

The president and council of the Royal Society have awarded the Hughes Medal to Prof. A. H. COTTRELL, Goldsmiths' Professor of Metallurgy, Cambridge University, for work on the physical properties of metals, particularly in relation to mechanical deformation and to the effects of irradiation.

FRENCH STEEL MARKET

Rising Demand from the Building Industry

From our Special Correspondent

THE boom in the use of steel for building and construction work which started a few years ago continues, and beams and joists remain the strongest point in the order-books of French steel mills. The rapid expansion in demand for structural steel results partly from the fact that its use in housing and office building has for a long time not been considered practical or economic by French builders. The main explanation, however, lies in the low price of French steel and the efforts of steel fabricators to rationalize their industry and develop up-to-date techniques.

Action taken by the steel industry has also contributed toward making technicians and the general public more aware of the advantages of the use of steel in this field, mainly from the point of view of time-saving. A recent example—a four-storey office building, completed in three months—gave a spectacular illustration.

Materials used for this building in a Paris suburb were mainly current U beams and joists for the structure, U bars and plate for the stairs, enamelled and painted sheet elements for the walls, and corrugated galvanized sheet for the roof. The structure itself was erected in 16 days by a team of workers using simple equipment.

Another trend in the use of steel in building is the development of "joinery" made from stainless steel. Among many examples of its use, the most notable is the new Orly air terminal. An all-steel and glass building, it has about 8,000 sq. metres equipped with curtain walls made of stainless steel, galvanized sheet, and glass. Altogether, about 40 tons of 18/8 chrome-nickel stainless steel in the form of sheet and profiles went into the building Estimated cost of the walling was about £25 per sq. metre, including the glass panes.

Use of stainless steel for joinery is attracting the attention of architects as well as building technicians. A recent competition organized by steel-makers on "How to make the best of stainless steel for windows" attracted 18 manufacturers, who submitted 31 exhibits.

National Inspection Council's Steady Progress

STEADY and rewarding progress over the past five years was reported at the annual meeting of the National Inspection Council for Electrical Installation Contracting last Friday. Applications for enrolment since October 31, 1960, have risen to 366 (300) with 256 (236) approved.

Mr. S. E. Goodall, director of engineering, Associated Electrical Industries (Woolwich), Limited, and a past president of the Institution of Electrical Engineers, presided and the guest speaker was Sir Robertson King, chairman of the Electricity Council and first chairman of NICEIC.

Steel Deliveries Down in Third Quarter

USAGE of steel in the home market in the third quarter this year, at a seasonally adjusted figure of 3,620,000 tons, showed little change from that during the previous two quarters, states the Iron and Steel Board in its production statement for October. Deliveries to most industries, however, showed a fall compared with the same quarter last year, associated in the main with the more rapid rate of stock reduction. Deliveries to the railways and rolling stock manufacturers increased by some 13 per cent., reflecting a small revival in the production of railway wagons for home use and export.

Weekly average deliveries of finished steel to the various using industries during the third quarter, with the figure for the same quarter last year in parentheses, were:—Coal mining, 8,800 (10,100) tons; railways and rolling stock, 13,100 (11,600) tons; constructional engineering and building, 38,200 (39,500) tons; electrical engineering, 8,000 (10,200) tons; mechanical engineering, 33,400 (35,700) tons; vehicle manufacture, 27,100 (34,200) tons; hollow-ware, 12,300 (13,800) tons; wire and wire manufacturers, 18,100 (20,700) tons; other consuming industries, 34,900 (38,300) tons; stockholding merchants, 33,100 (42,900) tons. Total home deliveries amounted to a weekly average of 238,000 (268,000) tons, and exports by producers to 44,100 (42,000) tons.

The fall of 9 per cent. in the total deliveries for the third quarter, 1961, compared with a year ago was spread fairly evenly over most products. Deliveries of ferro-concrete bars fell rather less than the average, activity in the building trade having remained comparatively high.

Weekly average deliveries of finished steel by product during the third quarter, with the figure for the same quarter in 1960 in parentheses, were:—Plate, 44,700 (47,900) tons; heavy rails, sleepers, and fishplates, 8,200 (9,700) tons; other heavy rolled products, 42,300 (46,400) tons, colliery arches and light rails, 6,300 (7,100) tons; wire rods, other rods and bars in coil, 22,900 (25,000) tons; ferro-concrete bars and rods, 10,700 (11,200) tons; light sections and bars, 46,600 (52,100) tons; strip, 32,800 (38,200) tons; sheet, 46,100 (52,200) tons; tinplate, terneplate, and blackplate, 19,500 (21,300) tons; tubes, pipes, and fittings, 22,600 (23,900) tons; all other products, 22,400 (21,100) tons.

Law Cases

Lack of Warning System in Pit Criticized

DAMAGES of £2,548 and funeral expenses were ordered to be paid by the National Coal Board to the widow of a mineworker, Mr. David Prescott (56), who was killed in an accident at Markham Colliery (Mon) in April, 1959, when he was struck by a journey of trams while repairing a collapsed part of a tunnel. Awarding the damages at Monmouthshire Assizes, Mr. Justice Paull criticized the lack of a simple warning system at the colliery.

The judge said it was obvious that before trams used the line a signal should be received that no men were working on it, especially when the men were working in almost total darkness. If the tram driver was uncertain where men were working, a chock should be put on the rope to mark it.

He said Mr. Prescott was using an air pick when the accident occurred, and did not hear the trams approach. There was a considerable element of danger, and a system should be established to warn of the approach of trams.

The judge dismissed the NCB's claim that Mr. Prescott was negligent as he did not warn his "butty" to watch for trams.

Steelworker Awarded £1,000 for Loss of Finger

AT Monmouthshire Assizes, Mr. William Robert Woodward (23), was awarded £1,000 damages by Mr. Justice Paull, against Richard Thomas & Baldwins, Limited, after he lost a finger while working as a trainee latcher at the firm's Ebbw Vale (Mon), steelworks five years ago.

It was important to stress, said the judge, that trainees should not be allowed to do dangerous work, unless they are very carefully supervised. The accident happened when Woodward had had "little training" and when the experienced latcher had left the shift an hour too soon.

MINER'S £4,500 CLAIM WITHDRAWN

AT the Court of Session in Edinburgh, a claim by Mr. John Arthur, a miner, for £4,500 damages against the National Coal Board was withdrawn by Lord Milligan after the jury had been told that the plaintiff had not brought sufficient evidence for a verdict in his favour. Mr. Arthur claimed for the loss of two fingers following an accident at Easton Colliery in 1958 and maintained that a coal-cutting machine was defective.

Denying liability, the NCB submitted that the machine had been properly maintained and that the accident had been caused, or partly caused, by the fault of the plaintiff, who, it was alleged, failed to take care for his own safety.

GUY MOTORS WOUND UP

ORDER for the compulsory winding-up of Guy Motors, Limited, motor vehicle manufacturers, of Wolverhampton, was made by Mr. Justice Plowman in the Chancery Division on the company's own petition. Mr. J. L. Morris Smith, for the company, said a receiver was appointed by a bank under a debenture to secure the company's indebtedness. He had sold the company's undertaking and assets for a sum insufficient to satisfy the debt due to the bank, thus leaving nothing for the unsecured creditors.

The directors had considered that their proper course was to present a petition for compulsory winding-up so that the company's affairs could be taken over by a liquidator. There was no opposition to the petition.

£1,400 FOR SCALDED FOOT

DAMAGES of £1,400 were awarded at Monmouthshire Assizes to Mr. Arthur Reginald Pritchard (38), against Girling, Limited, Cwmbran, for injuries he received while employed as a plant attendant. He claimed negligence and a breach of statutory duty by the firm. It was stated that Mr. Pritchard scalded his foot after it slipped through the top of a tank of boiling water. At the time he was replacing the cover on a chrome tank.

It was stated for the company that Mr. Pritchard's negligence caused the accident, as he knew the job was risky.

RTB WORKER AWARDED £2,650

AT Monmouthshire Assizes Mr. Justice Paull awarded Mr. Brinley Richard Davies damages of £2,650 against Richard Thomas & Baldwins, Limited, steelmakers, following an accident at the firm's Ebbw Vale works two years ago, when he was caught between two moving wire ropes and carried to the top of a slag tip before being thrown off.

Mr. Justice Paull commented that Mr. Davies was affected psychiatrically after a terrible experience.

MINER WINS REDUCED DAMAGES

CLAIMING £1,750 damages against the National Coal Board for injuries received while trying to start a pump at Torry Mine, Newmills (Fife), in May, 1957, Mr. John Orr Hepburn, a colliery pump operator, was awarded £510 at the Court of Session, Edinburgh.

A jury sitting with Lord Migdale assessed the damages at £850, but held that Mr. Hepburn was 40 per cent. to blame.

£850 WAS AWARDED at Monmouthshire Assizes to Mr. James Smith, a miner, against the National Coal Board, for injuries he received to his foot while working at Blaenserchan Colliery, Talywain, in 1958.

CARL COOKE (29), shotfirer at Thoresby Colliery, near Mansfield (Notts), and Hugh Murray (59), a scraper driver, were each bound over and Cooke was fined £5 for common assault underground.

FAILURE TO PROVIDE adequate protection for supply lines to an electric overhead crane at the Biddenham Works of the Bedford engineering firm of W. H. Allen Sons & Company, Limited, resulted in the company being fined £75 at Bedford Magistrates' Court. The firm pleaded Not Guilty.

CLAIM FOR £254 7s. 9d. damages against Black-Clawson International, Limited, engineers and manufacturers of paper mill machinery, of London, W.1, made by Mr. Cyril Carl Elwell (63), who suffered a hernia as a result of an accident at the firm's Newport (Mon) works, was dismissed by Mr. Justice Paull at Monmouthshire Assizes.

AN APPLICATION concerning an agreement between members of the Lead Sheet and Pipe Makers Federation will be heard by the Restrictive Practices Court before Mr. Justice Russell on Monday. On the same day the Court will hear an application concerning the Permanent Magnet Association and an agreement operating between its members.

In Parliament

PIT CLOSURES

Call for Independent Inquiry Rejected

ARGUMENTS for an independent inquiry into the closure of Scottish collieries, proposals for which were announced last week, were rejected by MR. RICHARD WOOD, Minister of Power, who said that while he did not underestimate the serious nature of the "setbacks" involved for the industry, he did not consider an inquiry would serve a useful purpose. Closures were a matter for the National Coal Board which was making an attempt to improve the efficiency of the industry by letting new and reconstructed collieries take the place of old capacity. The amount of old capacity to be replaced in 1962 was in line with what was anticipated in the Revised Plan for Coal.

MR. WOOD was replying to MR. ROY MASON (Lab.), who asked why the Minister was being so "ruthless" with the Coal Board, first allowing uncontrolled imports of oil and gas, and then proceeding to close faster than necessary so many of the mines. "It is like sending the coal industry to Coventry," he said.

MR. WOOD said he could not accept these implications. The Revised Plan for Coal talked about the closure of 205 to 240 collieries by 1965. Closures last year, including concentrations, were 44, and this year 32. These were below the figure that appeared in that plan and therefore there had been no pressure by the Government on the Coal Board.

Industry's Prospects

He added that he was aware of all the problems brought about by the closing of pits and the loss of manpower concerned, but there did not seem any sense in keeping men underground in a pit which was producing uneconomically and leaving other pits which could produce economically undermanned. The prospects of the industry were in its own hands. If productivity in the industry increased, its prospects would be very bright.

MR. EMANUEL SHINWELL (Lab.), said the Coal Board should make a clear and definite declaration of the number of pits to be closed in the period, and where these were, so as to remove the suspense among the mining community. MR. WOOD replied that the Revised Plan for Coal gave a general indication of the number of pits that would be closed over the period, and painted some picture of the social consequences which would result. It would be impossible, however, to give any accurate specification quite so far ahead of exactly which pits were going to be closed, because this depended on the working and trading results from day to day, and also on the likely demand for certain coals.

Asked by MR. WILLIAM HAMILTON (Lab.), whether, in view of criticism of the management of the industry in Scotland, he would institute an independent inquiry into closures there, MR. WOOD said that exceptionally difficult geological conditions had led to disappointments in the results obtained from some of the board's major capital development projects in Scotland and the output at a number of other collieries had been substantially less than was expected.

He did not see any point in holding an inquiry. The facts had been disclosed by the workings underground, and an inquiry would serve no purpose of any kind. The closures were being discussed with the unions concerned, and alternative work would be available within travelling distance for the majority of men affected.

In reply to questions from Scottish MPs asking for an inquiry by the Scottish Department into the social and economic effects of the closures, MR. R. BROOMAN-WHITE, Joint Parliamentary Under-Secretary of State, Scottish Office, said an inquiry would not reveal any new facts. Most of the men involved would be reabsorbed. MR. WILLIAM HAMILTON (Lab.) pointed out that Fife County Council had spent hundreds of thousands of pounds on social investment for miners at Rothes and Bowhill, two of the pits concerned. MR. ALAN THOMPSON (Lab.) said: "We are witnessing the slow annihilation of the coal industry in Scotland."

The PRIME MINISTER, Mr. Harold Macmillan, told Mr. A. WOODBURN (Lab.), former Secretary of State for Scotland, the following day that he was aware of the concern in Scotland about the closure proposals, but he had been told that other work was available for most men affected and he saw no reason to set up an inquiry into the social consequences of the closure, as suggested. He also saw no reason to set up an inquiry into the conduct of the industry in Scotland. "As regards trying every possible way to mitigate the results of closures . . . I think that the House must recognize the very remarkable way in which a considerable fall in the total employment of miners has been taken up by their employment elsewhere," he said.

Methane Imports Plan and Lurgi Process

GOVERNMENT'S decision to authorize the importation of liquid methane did not compromise the possibility of the development of the Lurgi process for the gasification of coal, MR. RICHARD WOOD, Minister of Power, again insisted in reply to Labour questions.

Mr. Wood said he thought it would be some months before the joint report of the Gas Council and the National Coal Board on the economics of a large-scale adoption of the Lurgi process would be available. He told MR. ALAN FITCH (Lab.) that the Gas Council had given no assurance that if the study showed that a large plant would be competitive with imported methane it would be built. "But if an additional Lurgi plant appears to be the best means of

providing a cheap, clean, and reliable gas, the Council will certainly go forward with it."

MR. ROY MASON (Lab.) said that the first full year's gas imports would be equivalent to 800,000 tons of coal, which was equal to the annual output of 2,500 miners. If this was coming in, as well as oil imports, it would have disastrous consequences for the mining industry. Mr. Wood replied that much depended on the extent to which gas sales increased. If they rose substantially because of the methane fuel, coal displacement might be less than was expected at present.

CLOSURE OF COLLIERIES

ASKED by MR. ROY MASON (Lab.) to what extent the Minister of Power had consulted the President of the Board of Trade on the question of alternative work as a consequence of pit closures, MR. JOHN C. GEORGE, Parliamentary Secretary, said in a written reply that there was the closest co-operation between his department, the Board of Trade, and the Ministry of Labour in order to mitigate the effect of pit closures. "Wherever it is appropriate, the president of the Board of Trade is prepared to use the powers available to him under the Local Employment Act."

In reply to MR. MASON'S request for an assurance that the Minister would not introduce legislation during the current session of Parliament to streamline the coal-mining industry, or set a target for it to become economic and commercially competitive within a specified time, MR. GEORGE said the Minister was not yet able to add to his statement on the subject during the debate on October 24.

MR. F. J. ERROLL, President of the Board of Trade, told MR. MASON that he was prepared to include as a development district under the Local Employment Act any area in which he was satisfied that as a result of pit closures high and persistent unemployment existed or was expected.

NO SMOKELESS FUEL DIFFICULTIES

IN the House of Lords, LORD FRASER asked whether, on balance, coal stocks were embarrassing and, if so, what steps were being taken to liquidate them. LORD MILLS, Minister without Portfolio, replied that they were now on a much more satisfactory basis. It was, he believed, a good thing to see considerable stocks in the hands of merchants and consumers because that avoided any trouble there might be from any hold up. The NCB's stocks were now getting down to more manageable proportions.

LORD PEDDIE: "Can you give any indication of the availability of stocks of smokeless fuel?"

LORD MILLS: "No difficulties of any note are being experienced in its supply."

Lancashire Foundry Trade

THE machine-tool, heavy electrical and most other engineering foundries in the Lancashire area are maintaining a steady rate of operations and this is reflected in the demand for pig-iron. There is still much less overtime being worked in various sections of the foundry trade, including the jobbing and light castings trades, and the pressure of pig-iron supplies is correspondingly below normal.

On the whole, however, producers report that the tonnage taken up in this part of the country is much the same as it has been of late.

Obituary

MR. R. D. MACMILLAN

THE death occured recently of Mr. Robert Davidson Macmillan, managing director of Controlled Heat & Air, Limited, industrial heat engineers, of Smethwick (Staffs), a subsidiary of the Incandescent Heat Company, Limited. Born in Glasgow in 1903, he received his technical education at Glasgow Technical College and served an apprenticeship with A. & J. Inglis, Limited, becoming a qualified marine engineer. In 1927 he joined the Pneumatic Conveyance & Extraction Company, Limited, Manchester, and later the Carrier-Owen Engineering Company, Limited, London.

Mr. Macmillan joined Controlled Heat & Air in 1933 as chief designer and was appointed managing director in 1945. He concentrated chiefly on the lower temperature phase of thermal engineering and contributed substantially to the development of continuous tinplate printing machines, dust extraction in both wet and dry forms, related combustion equipment and heat exchangers, and critical control of high velocity convection in continuous static and mechanized forms. He wrote many technical publications and also lectured.

Founder and former managing director of the Vokes, Limited, group, filtration and silencing engineers, of Guildford (Surrey), Mr. CECIL GORDON VOKES has died. He was 70.

Former managing director of G. W. Hurst & Company (Sheffield), Limited, steel manufacturers and merchants, of Sheffield, Mr. GEORGE WILLIAM HURST died on Monday at the age of 91.

The death has occurred, at the age of 75, of Mr. NORMAN V. C. RAVEN. A railway engineer, he served for 27 years with the Metropolitan-Vickers Electrical Company, Limited, and was responsible for carrying through many important railway electrification contracts.

Mr. FREDERICK BIRCHALL, who has died at Harrogate at the age of 91, was the founder of Peglers, Limited, ironfounders, of Doncaster, and its managing director from 1914 to 1938. He retired in 1938 but later became chairman, finally ceasing active association with the company in 1947.

The death has occured at the age of 77 of Mr. DAVID MCCALL, managing director for the past 32 years of Menzies & Company, Limited, shipbuilders and engineers, of Leith, Edinburgh. He was a member of the Institute of Naval Architects and of the Institute of Engineers and Shipbuilders in Scotland.

The death has taken place at the age of 61 of Mr. REGINALD BADEN SKEVINGTON, divisional marketing officer at the NCB's Avenue coking plant, Wingerworth (Notts). He started work in a colliery office and was later transferred to the Pinxton Colliery Company, Limited. On nationalization he remained on the carbonization side of the NCB.

Oldest employee of Taskers of Andover (1932), Limited, agricultural engineers and trailer manufacturers, Mr. HERBERT SMALLBONES, an inspector in the engineering department, died recently at the age of 78. He had served with the firm for over 50 years and was awarded the BEM in the New Year Honours. His father, seven brothers, and now his son have all worked for the company.

After dealing in a general way with the classification, manufacture, processing, and properties of alloy steel, the author discusses, with reference to India's indigenous sources, available supplies of alloying elements and how they may be conserved. He then examines India's present and future requirements of alloy steel and concludes that her production capacity in this respect will need to be increased considerably to keep in balance with India's Third Five-year Plan for steel production.

ALLOY STEEL

Present and Future Requirements of India

by D. P. CHATTERJEE*
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RAPID progress of metal-using industries, on which our civilization so greatly depends, has contributed very largely towards the development of alloy steel. When high-manganese and nickel steels were first produced in about 1888, world steel production was about 10,000,000 tons only. The subsequent development of a great many varieties of alloy steel has so enormously extended the world usage of steel that today world steel output has reached a figure of about 300,000,000 tons. Of this quantity, about 15,000,000 tons may be classified as alloy steel used for the production of tools and equipment to work up the remaining 285,000,000 tons.

The teeth of rock drilling bits, jaws of ore-crushing equipment, components of internal combustion and jet engines, parts of blast-furnace, rolling-mill, heat-treatment equipment, and many other things are made of alloy steel. The development of automobile, aircraft, chemical, and food-canning industries are also greatly dependent on these steels. One can easily imagine the revolutionary effect of alloying elements on the simple combination of iron and carbon which forms the basis of steel.

Early History

Tungsten is said to be the first alloying element added to steel. It was used by Jacob, an Austrian metallurgist, as early as 1855 to produce the first tungsten-bearing alloy steel. Subsequent development of Mushet's self-hardening steel, Hadfield's manganese steel, Brearley's "high-chromium stainless steel," Carnegie's "5 per cent. nickel steel," and a few other similar steels may be said to mark the beginning of alloy steel production in the world.

Metallurgists have now developed a wide range of alloy steel with a great variety of chemical and physical properties to meet the crescendo of demand that has arisen from the invention of metals and alloys with new properties, making possible the multitude of mechanisms on which our modern life so greatly depends now.

Definition of Alloy Steel

As yet, there is no universally accepted definition of alloy steel: technically it may be defined as steel which, in addition to the principal constituents, iron and carbon, contains other elements added intentionally to develop certain particular physical properties. Thus silicon, sulphur, phosphorus, and manganese when present in small percentages are considered to be the common constituents of ordinary steels, but are required as alloying elements when added in greater percentages to produce steels of distinct properties such as high-silicon electrical steels, sulphur-bearing free-cutting steels, and high-manganese austenitic steels.

In order to have a clear-cut boundary between alloy and non-alloy steel, different countries adopted different composition limits, but to compute the world production figure of alloy steel, an international standard of composition limits that properly define an alloy steel is needed. In the UK the present definition of alloy steel is "steel containing 0.40 per cent. or more of chromium or nickel; 0.10 per cent. or more of molybdenum, tungsten, or vanadium, or 10.0 per cent. or more of manganese."

Taking into consideration the different varieties of alloy steel which were produced during the last war and the alloy steel scrap still in circulation, the above composition limits are fully justifiable.

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However, in some steels the presence of such alloying elements as residual metals, that is, metals not added intentionally, has been found to have no appreciable effect on the physical properties of the finished steel. Other important alloying elements like cobalt, niobium (also known as columbium), titanium, and tantalum are always added in conjunction with one or more of the main alloying elements like, nickel, chromium, molybdenum, tungsten, or vanadium. In USA, a steel is considered to be an alloy steel when " the maximum of the range given for the content of alloying elements exceeds one or more of the following limits:—Manganese, 1.65 per cent.; silicon, 0.60 per cent.; copper, 0.60 per cent.; or in which a definite range or a definite minimum quantity of any of the following elements is specified or required within the limits of the recognized field of constructional alloy steels, aluminium, boron, chromium (up to 3.99 per cent.), cobalt, niobium, molybdenum, nickel, titanium, tungsten, vanadium, zirconium, or any other alloying elements added to have a desired alloying effect."

Alloy Steel Manufacture

Alloy steel may be broadly classified as alloy engineering steel and alloy tool steel, and each of these categories may be sub-divided into low-alloy and high-alloy groups. For example, in the British Standard 970 for wrought steels for use up to 6 in. ruling section, for automobile and general engineering purposes, there are altogether 47 (En 10-13, En 18-31, En 33-41, En 45-59, and En 100, En 111, En 160, En 206, En 207, En 320, and En 325) alloy steel. In the schedule of carbon and alloy steel published by the Superintendency of Technical Application of Metals of the former Ministry of Supply, UK, there are also 18 different varieties (V 9-14, V 16-21, V 23-28) of alloy steel to cover all the general requirements of the services for alloy engineering steel for the manufacture of such things as guns, carriages, small arms, vehicles, ammunition, military bridges, engineering equipment, mines, and torpedoes.

Both the 47 different En steels and 18 of different V alloy steel could be divided into " low " and " high " alloy groups. Both in the En and V series, high nickel-chromium-tungsten valve steel (En 54, 55, V 26), silicon-chromium valve steel (En 52, 53, V 24), 20 per cent. chromium-nickel-silicon valve steel (En 99, V-24A), chromium rust-resisting steel (En 56, V 25), rust-resisting high-tensile chromium-nickel steel (En 57, V 28) and rust and acid-resisting austenitic chromium-nickel steel (En 58, V 27) may be grouped as " high " and the rest as " low " alloy engineering steels. Similarly in the case of alloy tool steels, the high-speed, hot-die, high-manganese, non-deforming steels may be grouped as high alloy, and the nickel, nickel-chromium, die-block steels could be grouped as the low-alloy varieties.

The melting of alloy steel needs careful control and selection of steelmaking raw materials as well as exacting steelmaking practices. Further, since all the alloys, for example, nickel, chromium, tungsten, are of high intrinsic value, the avoidance of any loss of these alloying elements during melting operation is a vital economical factor. Since the control of atmosphere, and other melting conditions coupled with maximum utilization of the alloying elements with minimum loss can be best achieved in electric melting, all qualities of alloy steel are best produced in the electric arc furnace. The merits and demerits of steelmaking in electric arc furnace are well known, the process being now over half a century old.

Acid or basic open-hearth practice can also be adopted for the manufacture of low-alloy engineering and tool steels excepting in the case of alloy steels for major intricate forgings for which either acid open-hearth or basic electric arc practice is usually adopted.

For the manufacture of high-alloy tool steel, such as high-speed and hot-die steels where alloying elements of widely different densities are used, high-frequency induction-melting is the best practice because this ensures uniform distribution of the alloy element in the steel, freedom from contamination, better control in melting operation as well as comparatively low melting costs. The important advantage of the induction melting process lies in the action of electro-magnetic forces on the molten metal producing constant agitation, quick distribution of alloying elements to all parts of the charge, thereby ensuring melts of perfect homogeneity. In fact, laboratory precision on a production scale attended with faster melting, distinguishes high-frequency induction melting practice.

In the production of alloy steel, all ingots are usually top-poured and cast wide-end up, and after casting kept in the vertical position till completely solidified. It is essential to allow the ingots to solidify completely otherwise all kinds of quality troubles creep in on account of " cokey " centres. The solidification period of an ingot varies with the square of its minimum cross-section. It is also not desirable to leave an ingot in the mould after solidification is complete since this shortens mould life. For the manufacture of alloy steel, particularly of high-grade austenitic type, in the electric arc furnace, oxygen is used to intensify the melting process and for some products, such as rotors, ingots are cast in vacuum to avoid hydrogen trouble.

Processing of Alloy Steel

The general characteristics of alloy steel are that they need more than ordinary care throughout manufacture. Alloy steel is more sensitive to thermal and mechanical operations. This sensitivity is controlled to some extent by varying chemical composition. A high degree of internal soundness, relative uniformity of chemical composition, freedom from injurious surface imperfections as well as the general suitability of the particular steel for any specific component parts are some of the important requirements of alloy steel.

In order to ensure the satisfactory quality of such steels close control and supervision both of the melting and mill practices are absolutely necessary. This control entails:—(i) Careful

selection of raw materials for melting which may vary with each requirement; (ii) standardized steel-making practice; (iii) additional discard; (iv) selection of heats or portions of heats; (v) standardized heating and rolling practices; (vi) special observation and inspection and extensive testing.

Many alloy steels are made to a controlled grain-size practice. Fine-grained steels are particularly useful in the carburized parts where direct quenching is involved as they are less sensitive to variations in heat-treatment. Coarse-grained steels are deeper-hardening and more readily machinable.

Alloy steel ingots are either hammer-cogged or hot-rolled into blooms, slabs, and billets in specified piece-weights or to specified lengths having approximate cross-section dimensions. They are carefully control-cooled, inspected, and surface conditioned, if necessary by scarfing, chipping, or other means to remove injurious surface imperfections. In general practice blooms, slabs, and billets are hot-sheared or hot-sawn to required lengths. Flame-cutting is also used for some grades of steel. Cold-sawing and cold-shearing is permissible when the steels have been previously annealed. Alloy steel blooms, slabs, and billets are generally hot-rolled into a variety of sections, such as rounds, squares, flats, hexagons, and octagons.

The hot-rolled bars and sections may also have surface imperfections in varying degrees after the final rolling operation. Depending upon the end-use and available plant facilities, the hot-rolled sections are conditioned by grinding, chipping, or other means to remove harmful and injurious surface imperfections. Alloy steel bars cut in straight lengths may get bent or warped during thermal treatment and are always straightened before going for further fabrication. The hot-rolled, annealed, normalized, or heat-treated alloy steel bars are descaled by picking, tumbling, or shotblasting according to the finishing requirements, and after cleaning the material is coated with oil or any other rust inhibitors to prevent any surface deterioration.

Alloy steel cold-finished bars and sections are produced from hot-rolled steel by several cold-finishing processes in order to improve surface finish, dimensional accuracy, alignment, or machinability. Cold-drawing and cold-rolling are also employed to increase the yield and tensile strength as well as the ratio of yield to ultimate tensile strength. Cold-finishing processes for surface improvement processes may be used singly or in combination; they include cold-drawing, cold-rolling, turning, grinding, polishing, and straightening. The growth of automobile and other machine manufacturing industries has given rise to increased demands for cold-drawn alloy steel bars.

The development of turning, grinding, and polishing processes has been a major advancement in the manufacture of cold-finished bar from hot-rolled steel. These processes provide close control of size and a high degree of surface finish without significantly changing the mechanical properties of hot-rolled steel. Thermal treatment is necessary to facilitate the cold-finishing operation. Special irregular sections are finished either by cold-drawing from a special hot-rolled section or by adopting multiple drawing from a standard round, hexagon, square, or flat stock with intermediate anneals.

TYPES OF ALLOY STEEL

Production and Consumption by Various Industries in India and Abroad

The varieties of alloy steel are numerous. Every year new types of alloy steel are developed and added to the list. Some of these steels contain quite a large number of alloying elements. Alloy steel is broadly divided into the following classes:—Nickel; nickel-chromium; nickel-chromium-molybdenum; nickel-molybdenum; manganese-molybdenum; tungsten; chromium; chromium - molybdenum; chromium - vanadium; tungsten-molybdenum. In general the BSS 970 "En" Series, "SAE," and "NE" types of alloy steel represent the basic range of alloy steel compositions.

A careful study of the details of finished tool, alloy, and special steels and their proportionate distribution to various consuming industries including exports in respect of some of the most industrially advanced countries in the world provides some idea on the normal trend in type and quantity of future requirements as well as the types, shapes, and sizes of alloy and special steels which will be required for the present and future development programme. In planning such development work, it is also necessary that proper emphasis should be laid on establishing as far as possible such quality of steels which could easily be manufactured from the country's own mineral resources thereby making the country internally strong and self-sufficient.

Details of industry-wise proportionate distribution of alloy and special steels including stainless and heat-resisting varieties, which are nowadays mostly obtained by importation in India, are given in Table 1.

Table 1 shows that in India the present market-wise distribution is not fully comprehensive and requirements of many other industries, such as oil and gas-drilling, boiler-house, plant and equipment, textile machinery, railway rolling stock, agricultural machinery, shipbuilding and marine engineering, have yet to be met. From a consideration of the future industrial development programme as outlined in the Third Five-year Plan of the Indian Government's Planning Commission together with the present market-wise distribution of alloy and special steels, it may be safely assumed that India's future requirements of alloy and special steels could be grouped under four main categories in the following approximate proportions:—(1) High-alloy engineering and tool steels, 75 to 80 per cent.; (2) high-strength low-alloy steels, 11 to 14 per cent.; (3) stainless steels, 8 to 9 per cent.; (4) heat-resisting steels, 1 to 2 per cent.

TABLE 1.—*Present Proportionate Distributions, Category-wise, of Alloy and Special Steels Including Stainless and Heat-resisting Varieties (Mostly Obtained by Importation) to Various Industries in India.*

Sl. No.	Industries.	Proportionate distribution (approx. percentage).	Proportionate details of steels.								
			Hot-finished items.			Cold-worked products.		Stainless and heat-resisting products.			
			Blooms, billets, bars, rods, sections.	Plates, sheets, strips.	Die-block forgings.	Cold-drawn bars, rods, sections.	Cold-rolled and cold-reduced strips, sheets.	Stainless bars, rods, sections.	Stainless cold-finished shapes and sizes.	Stainless sheets, strips, circles, etc.	Heat-resisting rods, sections, wires.
			A	B	C	D	E	F	G	H	I
			Per cent.	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.
1	Machine tools, tools, implements, instruments, etc.	23.0	51.0	3.0	46.0	—	—	—	—	—	—
2	Automotive vehicles and parts, accessories, including parts for cycle industries)	7.0	—	20.0	20.0	60.0	—	—	—	—	—
3	Construction engineering	15.0	85.0	—	—	0.50	—	12.0	2.0	—	0.50
4	Electrical machinery and apparatus	33.0	0.50	45.0	—	0.50	54.0	—	—	—	—
5	Hollow wires (including domestic appliances)	5.0	—	—	—	—	—	8.0	8.0	83.5	0.50
6	Wire-drawing and ware manufacture (including manufacture and repairs of watches, small coil springs, pins, etc.)	8.5	—	21.0	—	21.0	55.0	—	3.0	—	—
7	Spring makers	5.5	68.0	18.0	—	14.0	—	—	—	—	—
8	Mining and quarrying	1.5	—	—	—	65.0	35.0	—	—	—	—
9	Unclassified industries	1.5	36.0	17.0	—	17.0	30.0	—	—	—	—
	Average percentage	—	23.0	22.0	11.0	12.0	25.0	1.50	1.0	4.25	0.25

In the high alloy engineering and tool-steel category, approximately 50 to 55 per cent. will be required in the form of blooms, billets, slabs, sheet bars, seamless tubes, rounds, wire rods, heavy and light structural shapes, 18 to 19 per cent. in the form of pipes and tubes, 15 to 16 per cent. as cold-finished and cold-reduced sheets, strips (including electrical sheets); 6 to 7 per cent. as cold-finished as well as cold-drawn bars, rods, sections, wires; 4 to 5 per cent. in the form of plates, hot-rolled sheets and strips and 2 to 3 per cent. in miscellaneous forms.

In the high-strength low-alloy category 80 to 82 per cent. will be required in the form of plates, hot-rolled sheets, and strip, 10 to 11 per cent. as blooms, billets, slabs, sheet bars, seamless tubes, structural shapes, 7 to 8 per cent. as cold-rolled sheets and strip, and about 1 per cent. in miscellaneous shapes and sizes.

In the stainless variety, 55 to 60 per cent. will be required in the form of cold-rolled sheets and strip, 12 to 14 per cent. as cold-finished bars and cold-drawn rods and wires, 16 to 18 per cent. as blooms, slabs, seamless tubes; 10 to 12 per cent. as plates, hot-rolled sheets, and strip, and about 2 per cent. in the form of pipes and tubes both for ordinary and pressure tubing.

In the category of heat-resisting steel, main requirements will be in the form of pressure tubing, which will constitute 50 to 55 per cent. of the total production and of the remaining quantity, 19 to 20 per cent. will be in the form of billets, slabs, seamless tubing, as well as hot-rolled bars, 14 to 15 per cent. in the form of plates, 6 to 7 per cent. in the form of cold-rolled sheets and strip; and 6 to 8 per cent. in other mixed shapes and sizes.

New plant and equipment now being planned for installation is designed to meet this expanded production requirement.

Effects of Principal Alloying Elements

Steel is the most versatile of the metals available for engineering applications because of the wide range of properties that can be developed in it by adjustment of chemical composition and heat treatment. The chemical composition of a steel, and particularly the alloy contents, constitute the major factor affecting transformation behaviour. This behaviour for a given composition will also be affected by the grain size and homogeneity of structure. The effects of different alloying elements on the properties of steel have been studied in detail in the past except in the case of the new and rarer alloying elements, the effect of which need further detailed study under different conditions.

The effect of any one element cannot be stated simply and briefly, as it depends not only on the quantity used but also on the amount of other elements in the steel. Presence of 0.30 to 0.50 per cent. of nickel in combination with 0.15 to 0.20 per cent. of Cr or 0.20 per cent. Mo tends to increase the hardenability of steel, whereas if the nickel content is 3.5 to 4.5 per cent., it shows the somewhat different effect of increased strength attended with toughness. It is also worth mentioning here that the purpose of adding alloys to steel will not be fully achieved unless the steel is carefully and suitably heat treated. Correct heat treatment is essential if the maximum usefulness is to be derived from an alloy steel. Many good quality high-alloy steels are often spoiled due to incorrect heat treatment.

Chromium is used in relatively small quantities, namely, up to about 1½ per cent. for a large variety of purposes. In such quantities it increases hardenability, allowing the attainment of high-tensile strengths with considerable ductility. In the quantities referred to, it is used mostly in conjunction with either nickel or molybdenum, or both. The element's principal use as a sole alloying element is in ballbearing steel, which usually contains 1 to 1½ per cent. Cr. Chromium is used in larger percentages in many tool steels and magnet steels and is the essential constituent of all stainless steels in which the chromium content is generally above 12 per cent. The cutlery type of stainless steel is a simple chromium steel containing 12 to 14 per cent. chromium, whereas the types of stainless steel used for most other purposes having to be more ductile and resistant to a wider range of corrosive media, contains about 18 per cent. chromium together with about 8 per cent. nickel and frequently small amounts of other elements.

Cobalt is used mostly in tool steels, magnet steel and heat-resisting steels for very high-temperature application, nearly always in combination with other alloys. In tool steel about 5 to 10 per cent. cobalt helps in the retention of hardness under hot-working conditions. In magnet steel it is added to the extent of up to 40 per cent. to increase coercive force.

Nickel is extensively used in alloy steels for engineering purposes generally in quantities up to about 5 per cent. When so used, its purpose is to increase tensile strength and toughness. Its other principal use is in stainless steel, as already mentioned.

Tungsten strengthens steels at normal and high temperatures. It is the principal constituent of high-speed steel, in which it is generally used in combination with several other alloying elements, in particular molybdenum, chromium, vanadium, and sometimes cobalt.

Molybdenum has an influence somewhat similar to that of chromium and tungsten. In high-speed steel it can be used partially to replace tungsten. Molybdenum has also other properties peculiar to itself, among which may be mentioned the assistance it gives to the 18/8 type of stainless steel in providing resistance to certain concentrations of sulphuric and other acids. In carbon and manganese steels, molybdenum tends to increase the depth hardness and in nickel-chromium steel it reduces the susceptibility to temper brittleness.

Vanadium's main effect is to increase hardenability. It is nearly always used in combination with other alloying elements, its effect depending on the other element and nature of its combination.

Niobium, tantalum, and titanium are variously used to prevent "weld-decay" in the chromium-nickel type of stainless steel. These elements are also valuable constituents in certain heat-resisting steels.

The usefulness of niobium was first detected when it was observed that the presence of 10 times as much niobium as carbon in 18/8 steel provided a satisfactory solution to the problem of intergranular corrosion. However, this metal is characterized by its resistance to corrosion. Its main function is to react with oxygen and nitrogen present at elevated temperature. It is usually added to molten steel as ferro-alloy containing 50 to 60 per cent. niobium plus tantalum (8 per cent. Si max., 0.40 per cent. C).

During the last war, in addition to the earlier known alloying metals, at least seven more metals became very important alloying elements for the production of special types of iron and steel. These elements are titanium, zirconium, tantalum, niobium, boron, aluminium, and calcium, they vary widely in their effect and also in their relative importance as alloying elements. Effects of titanium, tantalum, and niobium have already been described very briefly.

Boron, like carbon, forms an interstitial solution with gamma iron, although its solubility is much lower than that of carbon and amounts to only 0.001 to 0.002 per cent. by weight at the equilibrium temperature. The rate of diffusion of boron in gamma iron is more or less the same as carbon and the iron is readily boronized and deboronized. The presence of carbon does not appreciably affect the solubility or diffusibility of boron in austenite. Steels containing 0.0005 to 0.0075 per cent. boron are commercially important, as the presence of this amount of boron increases the hardenability of steel without having any serious adverse effect. In heat-treated steel products, presence of boron may replace an appreciable percentage of alloying element, thus boron-containing steels have extensive applications for conserving alloying elements. For example, it has been found that an addition of 0.002 per cent. of boron is equivalent to 0.30 per cent. manganese, or 0.35 per cent. molybdenum, or 0.50 per cent. chromium, or 2.0 per cent. nickel in developing the necessary hardenability.

Calcium, on account of its high vapour pressure, is insoluble under conventional steelmaking conditions both in solid and liquid steel and therefore cannot itself be used as an alloying element in steel. The main function of calcium in steel is its beneficial effect on the distribution of non-metallic inclusions in steel; this is due to its high affinity for oxygen and sulphur. Calcium is usually added as calcium-silicide, calcium-magnesium-silicide or calcium carbide. Under carefully controlled conditions, addition of calcium as calcium metal or as a compound of calcium is made because of its effectiveness in reducing the oxygen content of steel.

On account of its low solubility in steel, further work is necessary to develop suitable techniques so that intimate mixing between calcium or calcium bearing agent and the steel can be achieved. Care should also be taken in controlling the timing of additions, tapping temperature and tapping technique to obtain reproducible results.

The main characteristic effect of *zirconium* in steel is that it combines readily with the oxygen, nitrogen, and sulphur to form stable compounds. In fact, it has two uses in steelmaking: (i) the

deoxidation and scavenging, and (ii) its true alloying properties. When zirconium combines with nitrogen in steel, the steel becomes non-aging and less susceptible to grain-growth.

Alloy Conservation

Economical use of costly alloys is a matter of national importance particularly for India when practically all the alloys are imported. Success in this regard, however, depends greatly on co-operation between steelmaker and user. By designing components on the basis of lowest practicable mechanical strength for any specified duty, in other words not specifying a steel of tensile strength 100 ton/sq. in. when 60 tons/sq. in. will serve the purpose equally well, a user could help the steelmaker to save alloys. The saving of costly alloys could also be effected by allowing the steelmaker to select a particular composition to meet any desired physical properties and by careful segregation of alloy steel scrap according to composition before it is returned to the steelmaker.

Steelmakers can also help to make the utmost use of the alloy content of scrap by specifying where possible such steels as can easily be manufactured by remelting maximum amount alloy steel scrap and with the least amount of virgin alloys additions. The composition of such steel, however, should be well balanced so that it can be processed without undue difficulties to obtain the desired physical properties.

Sources of Alloying Materials

In India, the principal alloying elements used in the steel industry, except ferro-manganese and ferro-silicon, are imported either as ferro-alloys or in the metallic form.

Chromium occurs mainly in the form of chromite. The main producers are the USSR, South Africa, Philippines, Yugoslavia, New Caledonia, Southern Rhodesia, Cuba, and Turkey, though these are not all large exporters. In India, chrome ore is available and small-scale manufacture of high-carbon ferro-chrome has recently been started by the Mysore Iron & Steel Works, Bhadravati.

Cobalt in recent years has come from the copper mines of the Belgian Congo and Northern Rhodesia. These sources give more than 80 per cent. of the world production, the only other important producing countries being Canada, French Morocco, and the USA. In India, cobaltite (a sulpharsenide of cobalt) is found disseminated in Arvelli States at Khetri and places in Rajasthan and Linnaeite (cobalt sulphide) has been identified among copper ores from Sikkim, but no production of the metal has yet been started.

The USSR is by far the largest producer of *manganese*, followed by India, the world's leading exporter. South Africa and the Gold Coast are also large producers, while mining of manganese ore is also taking place on a smaller scale in North Africa, Egypt, Belgian Congo, and Latin America. In 1960, India planned an annual production of 2,000,000 tons of manganese ore.

The USA is the dominant producer of *molybdenum*, 35 per cent. of her production being a by-product of several copper mines. Chile, Japan, and Canada are other producers.

The main sources of *nickel* are the Sudbury mines in Northern Ontario, Canada (which provide over 60 per cent. of the world's supply), Cuba, New Caledonia, in the Pacific, and the USSR. A deposit in Tanganyika was discovered in 1945, but has not so far been commercially exploited.

Niobium has hitherto been produced mainly in Nigeria, which provides a large part of the world's industrial requirements, but as this source dries up it may be necessary to work very much lower-grade deposits. Norway and the Belgian Congo are gaining in importance as sources of supply.

Silicon is the most widely distributed element, the earth's crust having been estimated to contain more than 25 per cent. of it. It never occurs free in nature, but as a compound, usually silica (*e.g.*, sand) or a silicate (*e.g.*, in clay).

Tantalum, which occurs as tantalite, is usually found in association with niobium. The only important producers are the Belgian Congo, Brazil, South Africa, and Southern Rhodesia.

The two most important *titanium*-containing minerals are ilmenite, which is a natural iron-titanium oxide, and rutile, a natural crystalline titanium oxide. Chief producers of the first are India, the USA, Norway, and Malaya, and of the second, Australia, the USA, India, and the French Cameroons. Large deposits have recently been found in Canada and are in process of development.

Tungsten is mined in more than 30 countries, the leading producers in recent years being the USA, Bolivia, Brazil, Portugal, Spain, China, Korea, Burma, Siam, Canada, and Australia. In India, wolframite deposits are now being assessed by the Geological Survey of India.

The USA is the leading producer of *vanadium*, followed by Peru, South-West Africa, and Northern Rhodesia. It occurs as vanadium bearing-titaniferrous magnesite ore in the Mahurbhanj district of Orissa Estate in India. A small-scale plant for the production of V_2O_5 has been set up at Rairangpur, Orissa, which will soon be put into commission for the production of both ferro-vanadium and ferro-titanium.

Present and Future Requirements of Alloy Steel

Nickel, nickel-chromium, molybdenum, nickel-chromium-molybdenum, chromium-molybdenum, nickel-molybdenum, chromium, and chromium-vanadium types of alloy steel practically cover all the requirements of the light and heavy engineering industries. There are, however, certain complex high-alloy steels, like 4.0 per cent. niobium steel, high cobalt steel and Alnico which are used for special purposes such as jet rotor blades, and permanent magnets.

In view of many new projects planned under industrial and minerals development both in the public and private sectors, India's future requirements of tool, alloy, and special steels will go

on steadily increasing. It has been estimated by the Planning Commission that by the end of India's Third Five-year Plan, *i.e.*, by 1965 to 1966, the overall steelmaking capacity expected to be installed for the iron and steel industry would correspond to about 10,200,000 tons of ingots, including the capacity of all the main steel producers both in the private and public sectors as well as the small electric furnace plants producing billets for re-rolling. It has also been estimated that the overall requirements of alloy tool and special steels by 1965 to 1966 will be about 200,000 tons, which is only equivalent to about 2 per cent. of the total planned steel production of the country. The percentage of production of alloy and special steels in relation to the total steel production in some of the well-developed countries of the world varies from 5 to 11 per cent., *e.g.*, USA, 7.0 to 9.0 per cent.; UK, 5.5 to 6.0 per cent.; Japan, 9.0 to 11.0 per cent.; West Germany, 6.0 to 8.0 per cent. To cope with future requirements of all types of tool, alloy, and special steels to meet the demands of the various fast-developing industries, an initial target could even be fixed reasonably fixed as 4.0 to 5.0 per cent. of the total planned steel production. Therefore, since India is planning to produce about 10,200,000 tons of steel ingots by the end of the Third Five-year Plan, she should set up a production capacity of about 450,000 tons of tool, alloy, and special steels.

At present, ordnance factories are the only units producing small tonnages of all the different types of tool, alloy, and special steels referred to in this article, and their production rate is expected to increase quite substantially with the future expansion scheme for tool, alloy and special steelmaking in the different ordnance factories.

Since some of the important alloying metals like nickel, tungsten, cobalt, niobium, and tantalum are not yet definitely known to be available in our country and production of other available metals like chromium, vanadium, titanium, and zirconium has yet to be established on a large scale, it is desirable to develop and standardize economic alloy steels based on the alloying elements which are available in India. Simultaneously, the introduction of low-alloy steel in lieu of high-alloy steel previously used should be encouraged wherever possible. The usefulness of boron additions for replacing other alloys in various alloy steels without greatly sacrificing the physical properties has yet to be ascertained on a large scale, but it has already been established that the presence of 0.002 per cent. boron in solution in steel (not in a "combined" state) would allow a considerable reduction in nickel chromium and molybdenum of alloy steel used for components of small section (up to 3 in.).

Economy in the use of alloying metals may also be effected by changing the hardening practice usually followed. For example, in deciding upon a suitable steel for a particular shaft, it would not be necessary to select a high-alloy steel which on quenching should completely harden to the core. It would serve the purpose equally well if the hard zone extended over one third of the radius from the outside surface, because deliberate retention of residual compressive stresses in the peripherial zone of the shaft better withstands the operational fatigue stresses. Such selective hardening could be easily achieved by an adopting induction-hardening method instead of following the conventional thorough-hardening followed by tempering. With the induction hardening method, a plain, medium-carbon steel would serve the same duty as a high-alloy steel.

In the absence of tungsten ore resources in the country and the growing world shortage of hard metal so dependent upon tungsten-carbide, the development of a substitute tungsten-free hot-die and adoption of ceramic-typed turning tools and milling cutters in lieu of normal high-speed and super high-speed steel cutting tools must have priority. It is mentioned in this connection that the Metal & Steel Factory, Ishapore, has developed a tungsten-free hot-die steel suitable for use at a temperature of 600 deg. C. with high red-hardness and resistance to thermal shock.

The development and establishment of the bulk scale production of nickel free (fully or partly) stainless and heat-resisting steels must also have priority. Austenitic chromium-nickel-manganese steels in lieu of standard austenitic chromium-nickel steels are greatly used in industry to conserve nickel. Austenite chromium-nickel-manganese steels of chemical compositions (1) and (2) in Table 2 have been found to be a good alternative to conventional austenitic chromium-nickel steels (3) and (4) in this Table.

In view of the comparatively small quantities involved and "tailor-made" quality required in the finished product, alloy and special quality steels were first produced in crucible and subsequently in electric arc and induction furnaces. With the development of skill and acquiring of technique, it has been possible to have large-scale production of some of the alloy and special steels in open-hearth furnaces also.

Choice of a steel is determined by the conditions of service. A just appreciation of service will show whether the qualities to be primarily aimed for are hardness, resistance to wear, high strength, or, alternatively, toughness, and the ability to resist shock or again as is frequently demanded,

TABLE 2.—*Percentage Composition of Austenitic Chromium-nickel-manganese Steels and Conventional Austenitic Chromium-nickel Steels.*

Steel Nos.	C.	Mn.	P. (max.)	S. (max.)	Si. (max.)	Cr.	Ni.	N. (max.)
1	0.15 max.	5.50 to 7.50	0.06	0.03	1.00	16.00 to 18.00	3.50 to 5.50	0.25
2	0.15 max.	7.50 to 10.00	0.06	0.03	1.00	17.00 to 19.00	4.00 to 6.00	0.25
3	0.15 max.	2.00 max.	0.045	0.030	1.00	16.00 to 18.00	6.00 to 8.00	
4	0.15 max.	2.00 max.	0.045	0.035	1.00	17.00 to 19.00	8.00 to 10.00	

the best compromise between these opposing characteristics. The choice is also governed by cost, working life in relation to cost, or suitability for fabrication by various methods.

Quality is not always governed by composition. Quality and reliability, the indispensable characteristics demanded in all steels, depend on the soundness and cleanliness of the steel, and its satisfactory heat treatment.

Acknowledgments

The author expresses his thanks to Mr. Charles M. Parker, assistant vice-president, American Iron and Steel Institute, New York, Mr. F. S. Whitehead, manager, British Iron and Steel Federation, London, Mr. H. Dahlerus, manager, Swedish Steel Association, Stockholm, Mr. Bergmann and Mr. Attenberg, of the Association of the Cycle and Motor-cycle Industry, Frankfurt, West Germany, Mr. J. Zamecnik, of Technoexport, Praha, and Mr. Schoeller of M/s. Demag, Duisburg, West Germany, for supplying information.

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HENRY BRUTCHER TRANSLATIONS

NEW translations in the field of ferrous metallurgy issued in August by Henry Brutcher are listed below. A complete list (including non-ferrous papers) and individual papers may be obtained from Henry Brutcher, Technical Translations, P.O. Box 157, Altadena, Calif.

5149: "On the Hydrogen Problem in Alloy Steels from the Electric Furnace." E. S. KALINNIKOV and I. P. ZAVALUEV. Izvest. VUZ- Chern. Met., Feb., 1961, No. 2, 45/50; 3 figs., 3,100 words. $8.75.

5183: "Solidification and Crystallization of Steel in the Mould as a Source of Defects in Ingots and Forgings." V. KOSELEV and S. BURDA. Hutnik (Prague), Vol. 11, 1961, No. 3, 110-117; 23 figs., 4,900 words. $14.70.

5051: "New Developments Concerning the LD [Basic Oxygen] Process." R. RINESCH. Berg- Und Hüttenmännische Monatshefte, Vol. 105, 1960, No. 11, 302-313; 32 figs., 4,900 words. $14.70.

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4947: "Basic Oxygen [LD] Furnace Operated on High Hot Metal Charges." S. MAEHARA, T. KOHTANI, and K. TAGIRI. Tetsu to Hagané, Vol. 45, 1959, No. 9, 959-61; 3 figs., 1,500 words. $4.90.

5247: "Operating Results of the New Tobata [Japan] Basic Oxygen [LD] Plant." Y. MITARASHI and S. MORITA. Tetsu to Hagané, Vol. 46, 1960, No. 10, 1,180-82; 2 figs., 1,500 words. $4.50.

4943: "On the Lining of Basic Oxygen [LD] Furnaces." S. MAEHARA and T. KOHTANI. Tetsu to Hagané, Vol. 45, 1959, No. 9, 957-59; 3 figs., 1,300 words. $4.40.

5117: "Behaviour of Hydrogen in Basic Arc Furnace Steel Bath During Oxidizing Stage." S. NAGATA, *et al.* Tetsu to Hagané, Vol. 45, 1959, No. 9, 966-67; 3 figs., 950 words. $2.90.

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5172: "Use of Bituminous Coals and Hot Blast in the Strand Sintering of Minette Iron Ores." K. HEYDEN. Stahl und Eisen, Vol. 81, 1961, No. 8, pp. 498-501; 6 figs., 2,800 words. $7.80.

5109: "Reactions in Rotary Steelmaking Vessels with Oxygen Top Blowing," Part 2. P. E. HARDT, G. VOCKE, and H. SCHENCK. Stahl und Eisen, Vol. 81, 1961, No. 5, 311-320; 17 figs. 7,700 words. $19.70.

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5221: "Contribution to the Use of Oxygen in Open-hearth Furnaces." H. KOSMIDER, *et al.* Stahl und Eisen, Vol. 81, 1961, No. 11, 701-707; 14 figs., 5,700 words. $14.80.

5069: "Krupp-Renn Process Granules and Sponge Iron as Coolants in the Basic Oxygen [LD] Process." E. PLÖCKINGER and K. BOROWSKI. Technische Mitteilungen Krupp, Vol. 18, 1960, No. 1, 1-8; 9 figs., 5,500 words. $14.40.

OUTPUT FROM ATLAS COPCO AB, Stockholm, will be almost doubled when two newly opened workshops at Sickla, just outside the city, come into full production. Entitled Simba and Sirrocco, the two workshops will, respectively, produce drill rigs, wagon drills, and compressor units, and rock drills and spares.

A NON-FERROUS METALS and electric cable industry has been established by associated companies, Metal Manufacturers, Limited, and Cable Makers Australia Pty., Limited, on a site at the South Australian Housing Trust's satellite town of Elizabeth. Metal Manufacturers erected a copper wire and strand factory and a copper tube factory, and Cable Makers Australia Pty. a factory to manufacture thermoplastic insulated cables. The total capital investment amounts to about £450,000.

Linby Colliery

Part 1: Reconstruction and Reorganization

by E. P. LAWRENCE, M.I.Min.E.,* and C. RHODES, M.I.Min.E.†

In this paper, which is being published in two parts, the authors outline the reorganization of Linby Colliery in No. 6 Area of the East Midlands Divisional Coal Board and discuss the results. Part 1 provides the background to the reconstruction and describes the first two stages, involving a new cable-belt conveying system. Part 2, which will appear next week, describes the immediate effects of the reorganization. The paper was presented to the Midland Branch of the National Association of Colliery Managers on February 20, 1961.

ONE of 10 pits comprising No. 6 Area of the East Midlands Division, Linby Colliery is situated six miles north of Nottingham and one mile north of Hucknall. The colliery take is in the extreme north of No. 6 Area, being bounded by the colliery takes of Bestwood, Calverton, and Hucknall, and on the north by the dividing line between No. 4 and No. 6 Area.

In the late 1860s, two 14-ft. dia. shafts were sunk to the Waterloo Seam at a depth of 458 yd. Production commenced in 1873 from the Top Hard Seam, lying at a depth of 433 yd., and this was worked extensively until its exhaustion in 1934. The colliery was then producing 114,000 tons per annum. In 1927 the development of the High Hazel Seam, at 364 yd. in depth, was commenced. By 1942 working conditions had become so difficult that the seam was abandoned.

The High Main Seam, lying at a depth of 216 yd., was opened up in 1913. It was not until the early 1930s that it was worked extensively in order to replace the output from the Top Hard Seam. The High Main Seam varies in thickness from 3 ft. 4 in. to 3 ft. 11 in., having an average full dip of 1 in 30 in an easterly direction. Since the abandonment of the High Hazel Seam all the output has been produced from this seam. While some of the large and graded coals provide a readily acceptable house coal, much of the output is used for industrial purposes.

The two steam winding engines manufactured by Robey & Company, Limited, and installed in 1922 are still in use today. In 1951 a new Baum washery plant was constructed. It has a capacity of 200 ton/hr. of below 6-in. mineral and storage bunkers holding 500 tons. A new dirt disposal plant with requisite aerial ropeway was also erected. Later in that same year a Walker McCard axial-flow type fan was installed. This fan is capable of circulating 215,000 cu. ft./min. at a water gauge of 8.7 in.

From Table 1 it can be seen that in 1947, the first year of nationalization, Linby Colliery produced 319,754 tons, with an overall o.m.s. of 28.9 cwt. Double-shift working was introduced in 1948. Bulk output increased gradually up to 1952 and then started to decline. In 1954 the colliery suffered a severe blow due to an underground fire. This necessitated sealing off two large-coal producing units, namely, 14s and 15s, and a total length of 560 yd. of working face was lost.

TABLE 1.—*Results at Linby Colliery from 1947-54.*

Year ended.	Manpower.	Output.	Output per manshift.	
			Face.	All employed.
		Tons.	Cwt.	Cwt.
1947	977	319,754	73.4	28.9
1948	1,083	467,608	92.0	38.5
1949	1,132	511,925	96.2	37.7
1950	1,212	568,406	93.4	39.7
1951	1,271	630,721	89.9	40.0
1952	1,341	641,035	94.0	38.7
1953	1,338	622,306	92.0	39.0
1954	1,373	599,810	95.0	36.5

Underground Transport Facilities in Early 1955

Fig. 1 shows the two independent underground transport systems in operation for handling coal from the north and south sides of the shafts until May, 1955. Coal from the south side of the shaft was transported by gate and trunk conveyors to 6s loading point, where it was loaded into 15-cwt. tubs and then hauled by endless rope a distance of 2,300 yd. to the shaft. Coal from the north side was conveyed to 3s loading point, adjacent to the pit-bottom circuit, and loaded into 15-cwt. tubs. The tubs were hauled a short distance by endless rope to an elevating creeper, from which they gravitated to the shaft bottom.

* Group manager, Area No. 6, East Midlands Divisional Coal Board.
† Manager, Linby Colliery, Area No. 6, East Midlands Divisional Coal Board.

Coal stock room in the pit-bottom circuit was very limited.

No. 2 shaft (downcast) was equipped for coal winding with a pair of two-deck cages, holding two 15-cwt. tubs per deck, each deck being separately loaded. The pay load was 3 tons and the winding capacity 240 ton/hr. No. 1 shaft, being essentially the service shaft, performed limited coal-winding operations at peak loading periods.

Maximum winding capacity was only 75 ton/hr. Conventional tub circuits were employed at the surface with very limited stocking capacity.

Although the washery was adequate, the hand cleaning arrangements were extravagant on manpower and were in need of overhaul or of replacement.

They consisted of two 48-in. steel plate belts, which, together with the sizing screens, had been installed in 1929.

It was evident that if output was to be increased beyond the average daily output of 2,350 tons and the overall o.m.s. increased, then the mine would have to be reorganized. The following factors were important:—

(*a*) The transport system and plant could not handle any increase in output.

(*b*) Manpower commitments were heavy due to two loading points being used. It was impracticable to concentrate all the output to 6s loading point, as the haulage system was inadequate to deal with it.

(*c*) Circuits only permitted a limited storage capacity. This caused frequent delays at the loading points during peak coal filling periods.

(*d*) Excessive face conveyor stands due to delays on the transport system created high payments for standing time, with some degree of discontent and frustration among the faceworkers.

(*e*) The current coal-producing districts, which were reasonably close to the shafts, were rapidly being exhausted. In the very near future it would be necessary to concentrate all workings on one side of the pit at a greater distance from the pit bottom.

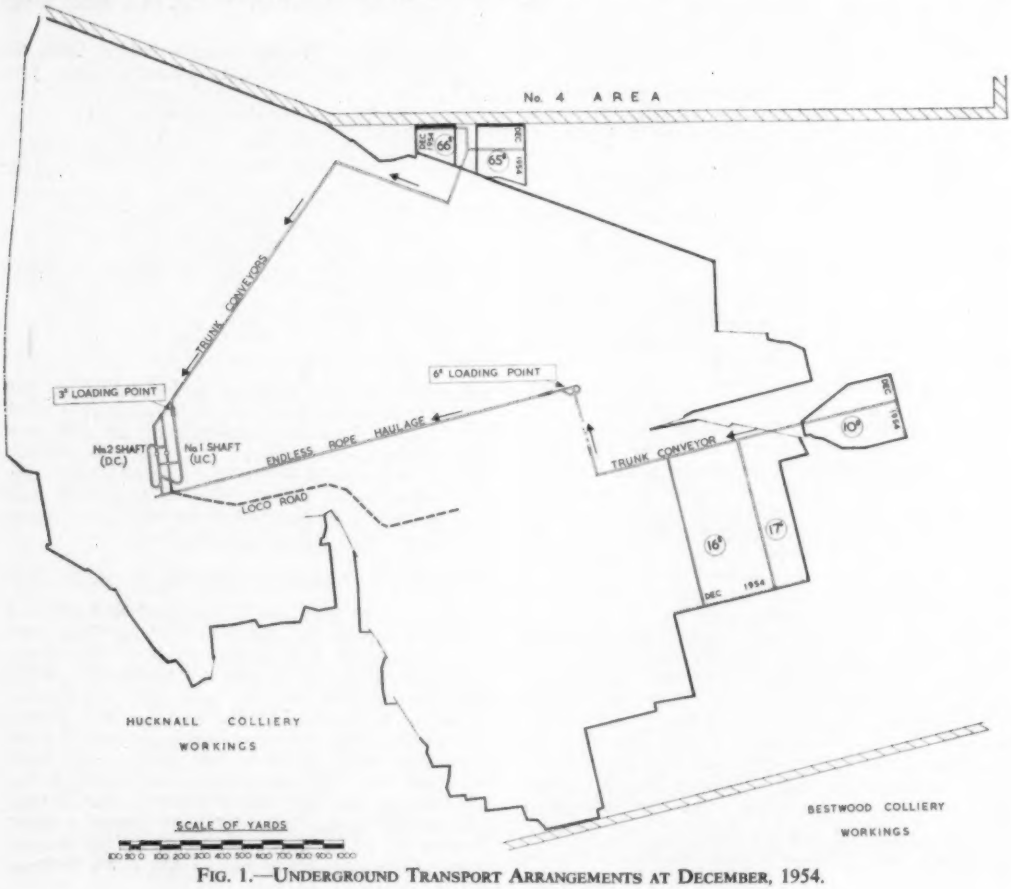


FIG. 1.—UNDERGROUND TRANSPORT ARRANGEMENTS AT DECEMBER, 1954.

(*f*) At that time every endeavour was being made to introduce coal-face mechanization in order to increase production. This was limited at Linby due to the inefficient transport system. The introduction of two Meco-Moore cutter loaders on 17s double-unit face had not proved a success due to the actual production time available for the machines being so low.

(*g*) Manriding facilities were limited to the south side and available for a distance of 1,600 yd. only. Materials transport was chiefly by pony haulage, a slow and costly system.

(*h*) The existing main roadways would not be big enough to maintain good ventilation for future workings, which would be more than 3 miles from the shafts.

(*i*) Owing to the underground fire in May, 1954, 14s and 15s units had been sealed off. This had resulted in a loss of 560 yd. of working face, and had created the need for additional development.

(*j*) Existing tub circuits on the surface were costly in manpower, and difficulty was experienced in dealing with coal in the No. 1 pit-top circuit.

(*k*) The dry-screening plant and the run-of-mine steel plate belts were in need of overhaul or replacement. Breakdowns were frequent and, because of lack of storage capacity, were reflected back to the face.

(*l*) The development plan as envisaged, with future workings concentrated in one main area, was suitable for the introduction of a trunk conveyor system handling the entire output in one stream to the pit bottom.

An assessment of these factors, together with time studies of face and loading-point delays and winding, proved conclusively the need to reorganize the underground transport arrangements, the winding system, and coal-preparation facilities.

Early in 1955 it was decided to adopt a two-stage plan of reorganization. Stage 1 was to be completed in 1956. It was designed to improve the underground coal transport system and provide storage capacity to deal with peak loading. It was to consist of the construction of a 500-ton underground bunker at the inbye end of 7s roadway and the installation of a cable-belt conveyor from the bunker to a pit-bottom loading point.

It was realized that in order to complete the enlargement of 7s main roadway for the cable-belt installation, temporary transport arrangements

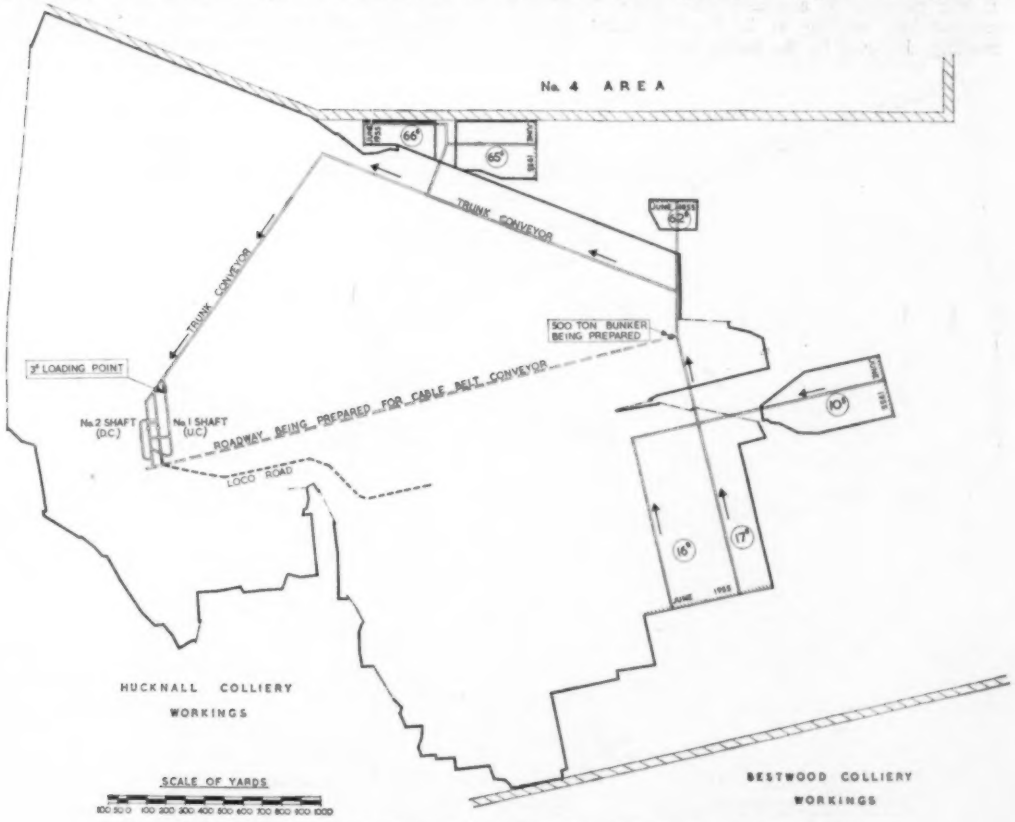

No. 4 AREA
TRUNK CONVEYOR
TRUNK CONVEYOR
500 TON BUNKER BEING PREPARED
3rd LOADING POINT
No.2 SHAFT (D.C.)
No.1 SHAFT (U.C.)
ROADWAY BEING PREPARED FOR CABLE BELT CONVEYOR
LOCO ROAD
HUCKNALL COLLIERY WORKINGS
SCALE OF YARDS
100 50 0 100 200 300 400 500 600 700 800 900 1000
BESTWOOD COLLIERY WORKINGS

FIG. 2.—TEMPORARY UNDERGROUND TRANSPORT ARRANGEMENTS AT JUNE, 1955.

would have to be made to release 7s roadway from its production commitments.

Stage 2 provided for the replacement of cage winding at No. 2 shaft by skip winding, using plate feeders instead of skip pockets. This would eliminate the temporary loading point envisaged in stage 1.

Stage 2 also planned for the replacement of the existing coal-preparation plant by new primary screens and a rotary picking table.

The aim and object of stage 2 was to increase the capacity and efficiency of winding and coal preparation, this to be completed in 1957. The need to improve services at No. 1 shaft was considered and it was felt that upon completion of skip-winding arrangements a reorganization of the No. 1 pit-bottom area should be undertaken during 1958-59. This would improve manriding and material handling facilities at No. 1 shaft and would provide locomotive passbyes, garage, and workshops.

It was evident that if stage 1 programme was to proceed without impeding production, and be completed on schedule, then the existing transport system would have to be altered. By June, 1955, it was possible to abandon 6s loading point and concentrate loading at 3s loading point by de-routing the coal to the north side.

Fig. 2 depicts the new, but temporary, transport system. Conveyors were redirected to deliver the south-side coal along 8s belt roadway. It was then transferred on to 29s conveyors to meet the north side coal at 65s transfer point, delivered on to 19s trunk belts and so to the loading point at 3s.

It was now possible to enlarge the pit-bottom roadway from a point 120 yd. inbye from the shaft back to 7s main road junction, repair 7s main roadway, and commence sinking the inbye bunker shaft.

Reorganization: Stage 1

Fig. 3 shows the reorganized transport system as completed in August, 1956, the preparatory work commencing in July, 1955. Throughout its entire length of 2,800 yd., 7s main roadway had to be ripped, dinted, and supported by 13-ft. by 9-ft. arches. Seven teams of men were engaged on this work, and it was essential that the disposal of the dirt should not interfere with the winding of coal. The full tubs were taken by the endless-rope haulage to 36s junction, and from there by a small 22-h.p. diesel locomotive back to No. 1 shaft, where they were wound out on the nightshift.

Inbye of old 6s loading point a conveyor was installed to the point where a 1 in 4 drift was to

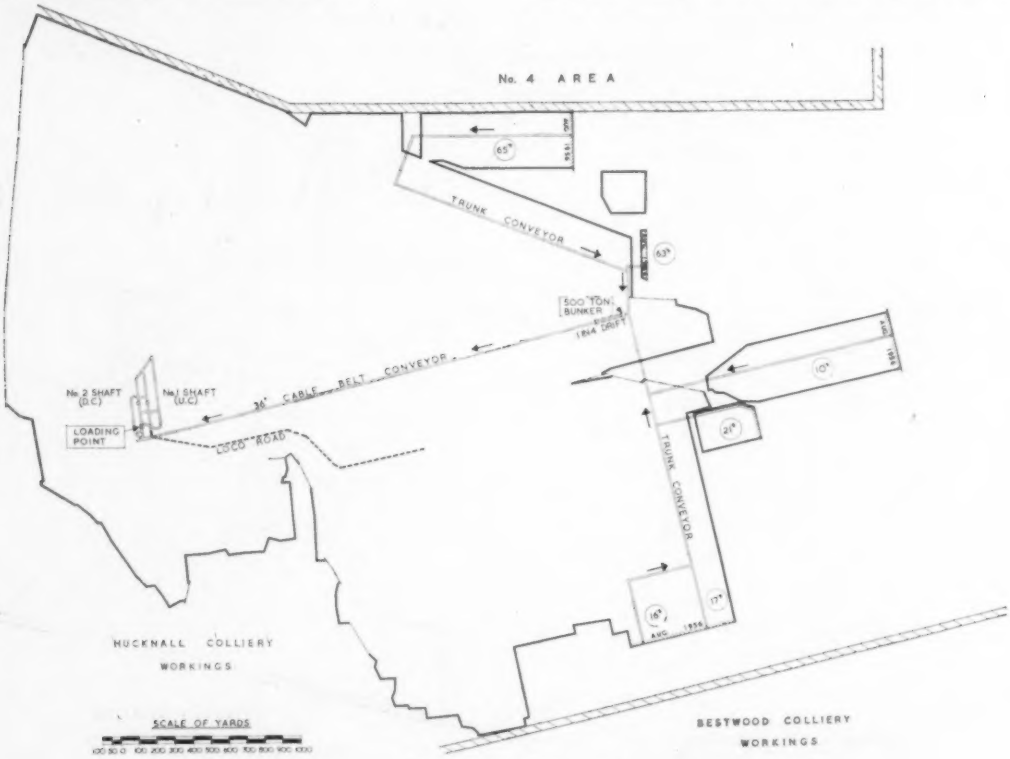


FIG. 3.—UNDERGROUND TRANSPORT ARRANGEMENTS AT AUGUST, 1956.

be driven to the bottom of the storage bunker. Repairs to this length of roadway could then commence.

The work on the 1 in 4 drift and the bunker had to proceed at the same time. To keep the dirt out of the coal stream a conveyor was installed in that part of the roadway directly over the 1-in-4 drift. The bunker shaft was sunk from the top road by the Area sinking team, using conventional methods. The dirt was loaded into tubs which, when raised, were emptied by a tippler onto the drift conveyor.

The thurling of the bunker with the drift was done from the bunker. Later, the 1-in-4 drift was extended beyond the bunker to form the tension run and weight chamber for the cable belt. To ventilate this length of drift three lined boreholes, 4-in. dia., were put down from 8s junction by the Area boring staff.

The 7s haulage enginehouse was to be the site for the cable-belt driving unit, and had to be enlarged. During this enlargement the haulage engine had to remain in position as it was required to haul dirt from inbye work. A canopy strong enough to carry the dirt and to withstand shotfiring was erected above the engine. A conveyor was installed on top of the canopy to deliver the dirt into tubs at 7s junction. As the junction had to be enlarged to take the cable-belt discharge unit, it presented special difficulties. Part of the excavation was around the existing curved roadway, and the junction had to be as free as possible from obstruction as it was in the main intake air circuit.

The pit-bottom roadway from 7s main roadway junction was enlarged to 17 ft. by 12 ft. from the existing 11-ft. by 7-ft. section, to a point 120 yd. from the No. 2 shaft, where a temporary loading station was made.

Finally, the junction of 62s, 7s, and 8s was enlarged to accommodate two new transfer drive units. These deliver coal by a twin chute to a 48-in. wide plate belt, and so to the storage bunker. The installation of the equipment for the new transport system was completed during the pit holiday period in August, 1956. The changeover was made and tried out prior to the resumption of normal production.

Reorganization: Stage 2

From September, 1956, preparatory work was in operation in the pit-bottom roadway, the shaft inset and the shaft itself, in order to effect a changeover to skip winding in August, 1957. Work on the surface was also in progress to allow for the skip winding installation and the provision of the new dry-screening plant. The complete changeover from cage winding to skip winding with new screening plant was duly completed during the

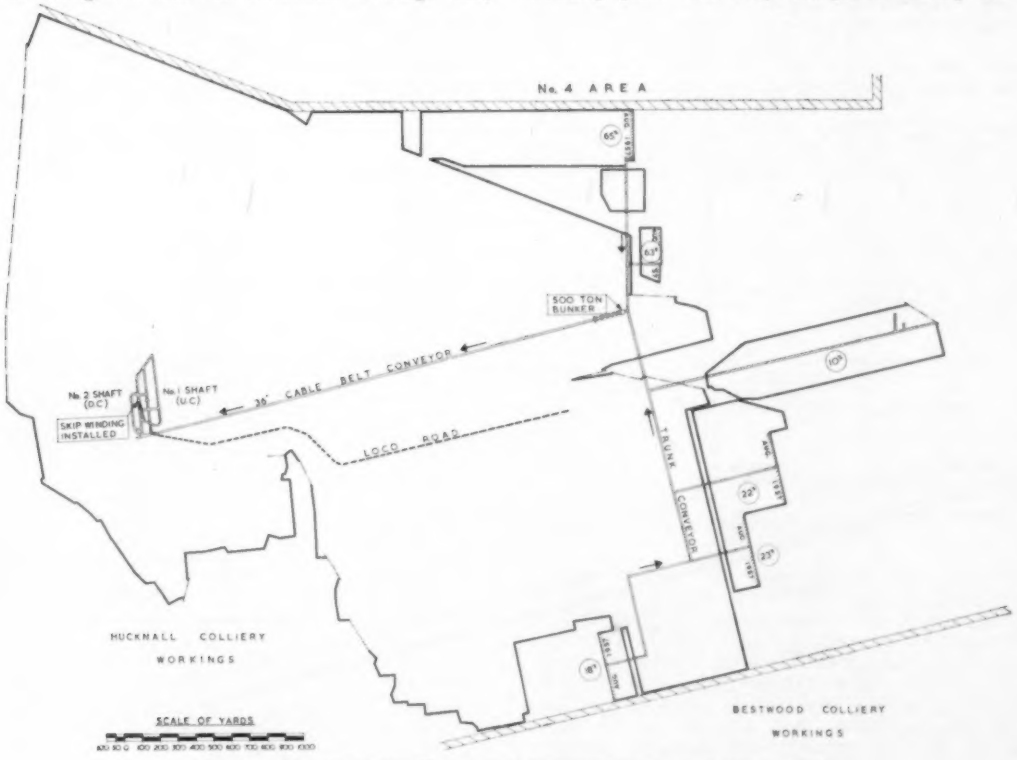


FIG. 4.—UNDERGROUND TRANSPORT ARRANGEMENTS AT AUGUST, 1957.

annual holiday period of August, 1957. The underground transport arrangements at this date are shown in Fig. 4.

Coal output from the north and south faces was now concentrated at 8s junction. The following is a description of the equipment used in coal transport from this point to the surface screening plant.

A plate feeder (Fig. 5), delivering coal from the twin chutes of 62s and 8s trunk conveyors, was manufactured by Qualter Hall & Company, Limited. It is 60 ft. long, 48 in. wide, driven through a Radicon gearbox by a 35-h.p. motor, and runs at 70 ft./min.

The coal is delivered from the plate feeder into the storage bunker which is 104 ft. deep, and lined with 15 in. of concrete to give a finished diameter of 20 ft. 2 in. In the centre of the bunker there is an open, 6-ft. dia., single spiral chute. The original method of supporting this spiral was by 12-in. by 6-in. girders set horizontally into the concrete walling and stiffened by two stub girders. However, after only 13 months of use, it was found that the girders were twisting. The whole of the structure therefore had to be rebuilt.

The new structure consists of 12-in. by 8-in. horizontal girders stiffened by ribs welded between

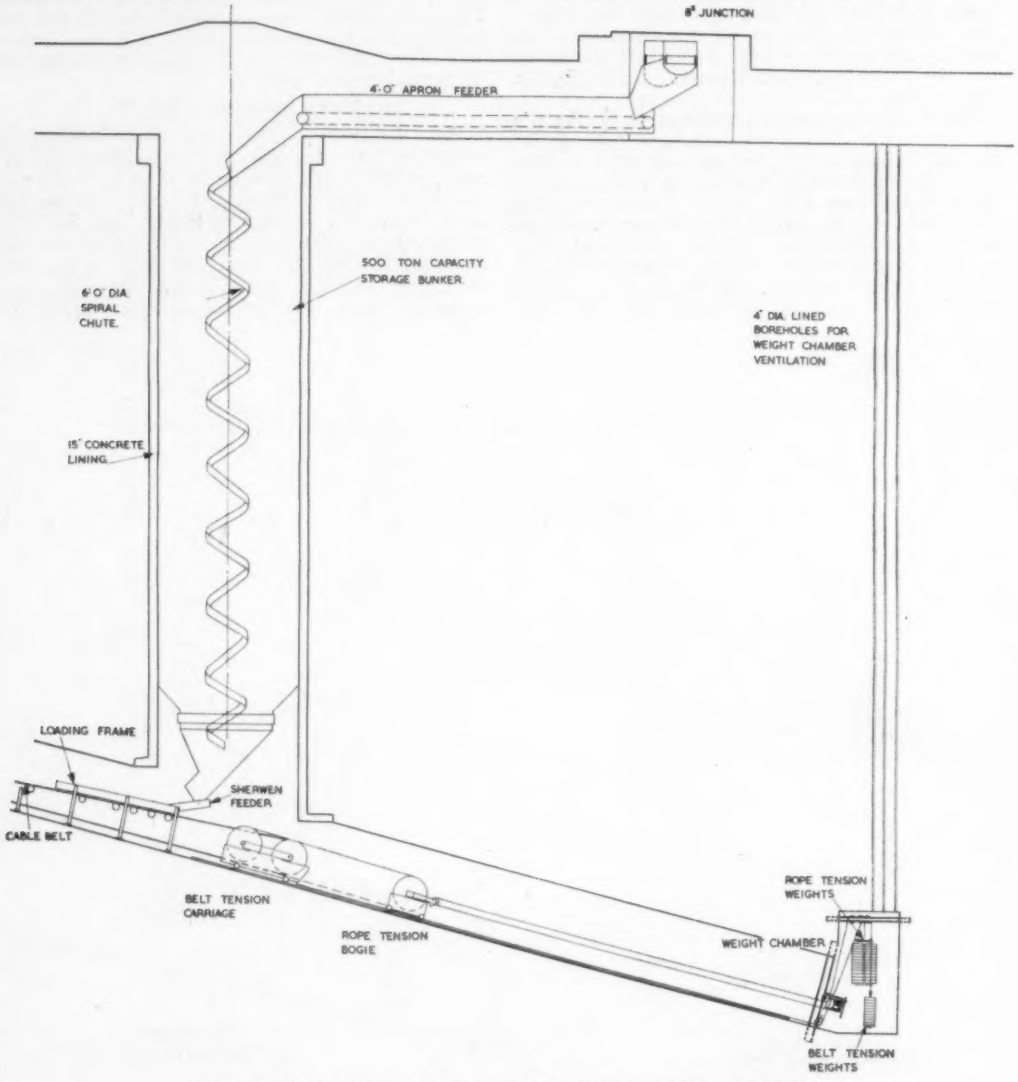


FIG. 5.—BUNKER DETAILS AND CABLE BELT TENSION ARRANGEMENTS.

FIG. 6.—GENERAL VIEW OF 7s ROADWAY AND CABLE BELT CONVEYOR.

the flanges at 2-ft. centres. Only one stub girder was used, set in a central position. Two vertical struts, bolted between the horizontal girders on either side of the spiral chute, created a column of support not originally provided. The revised method of support has now been in use for over three years and has been troublefree.

The feed from the bottom of the inbye storage bunker onto the cable belt is controlled by a Sherwen flameproof vibrating feeder, 48 in. wide and 6 ft. long. The rate of feed to the cable belt is controlled by a rheostat, which is normally set to the shaft-winding capacity.

Cable Belt Conveyor

The cable belt conveyor, shown in Fig. 6, is 2,830 yd. long with a lift of 335 ft. The belting on this conveyor is 36 in. wide.

It was originally designed to handle 300 tons of mineral per hour. The ropes are 1 in. dia. and travel at 250 ft./min. The driving unit was initially No. 8 size with a 250-h.p. motor.

The hinged-type linestands were pitched at 24-ft. intervals, each being fitted with a top line pulley assembly to carry ropes, belt, and mineral.

Alternate linestands were fitted with a bottom line pulley assembly to carry the return ropes and belt only.

The full length of this conveyor has been divided into six sections for the signalling and linestands protection systems.

Other protective devices include a bottom-belt plough at the return end, belt break, rope break, rope slip trips, and trip wire in the chute. All these,

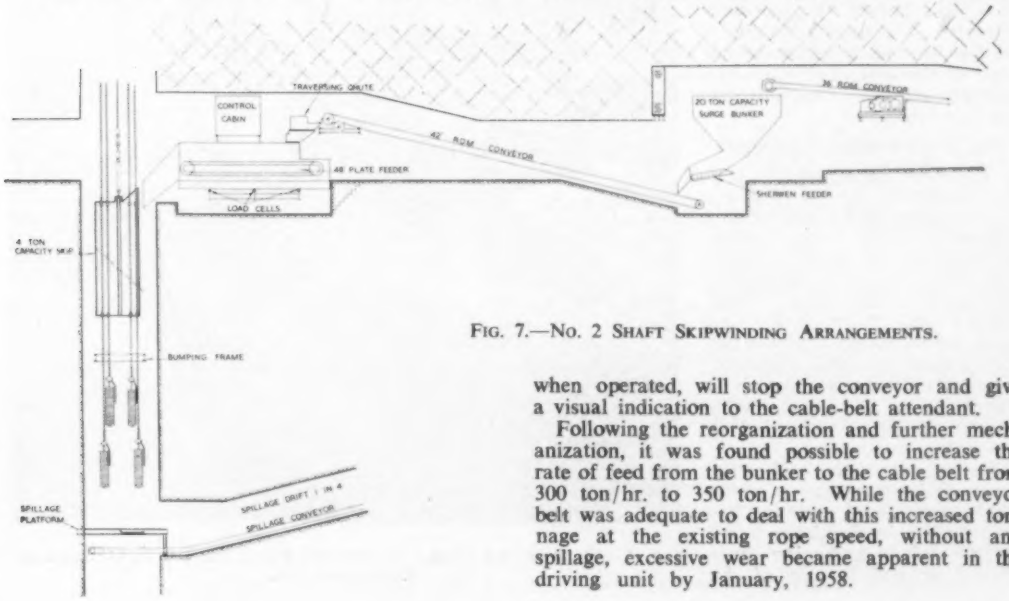


FIG. 7.—NO. 2 SHAFT SKIPWINDING ARRANGEMENTS.

when operated, will stop the conveyor and give a visual indication to the cable-belt attendant.

Following the reorganization and further mechanization, it was found possible to increase the rate of feed from the bunker to the cable belt from 300 ton/hr. to 350 ton/hr. While the conveyor belt was adequate to deal with this increased tonnage at the existing rope speed, without any spillage, excessive wear became apparent in the driving unit by January, 1958.

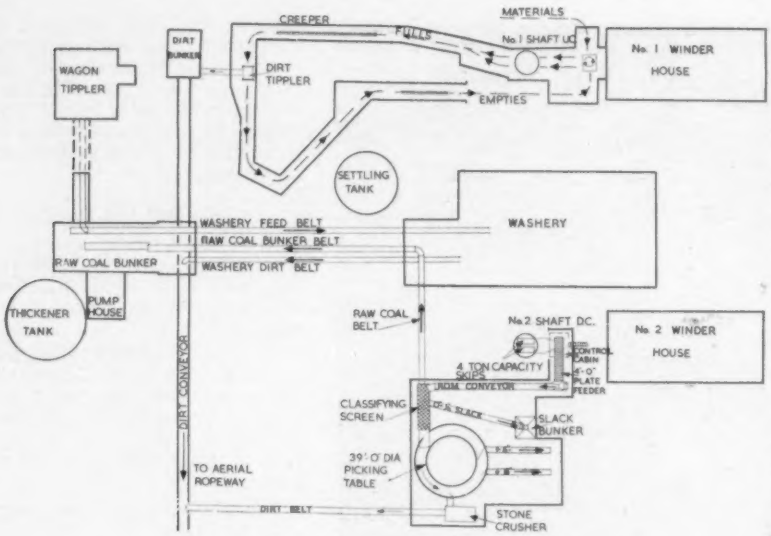


FIG. 8.—PIT TOP CIRCUIT AFTER REORGANIZATION.

New gearing comprising first motion double helical and differential gear was fitted immediately. In April, 1958, it was decided to fit special alloy first and second reduction gears. However, scuffing and pitting of the gears developed again and following discussions between Area engineers and Cable Belt, Limited, it was decided that the next larger size driving unit should replace the existing No. 8 unit. The No. 9 driving unit was fitted in August, 1959, and has proved to be satisfactory. The original belting is still in use and it was estimated that at the end of 1960 it had already carried 3,800,000 tons of mineral.

No. 2 Pit-bottom Equipment

From the cable belt, the coal is conveyed by a Sutcliffe Tigress 36-in. belt conveyor to a 20-ton capacity surge bunker, situated 40 yd. from the shaft side (Fig. 7). This bunker is equipped with both "high level" and "low level" cut outs, which automatically switch off, either the inbye conveyor, or the feed from the bunker to the skips, in the event of the bunker filling to capacity or becoming empty.

Discharge from the bunker is controlled by a Sherwen vibratory feeder onto a 42-in. belt conveyor. At the delivery end of this belt, a traversing chute directs mineral to one of the two plate feeders. The plate feeders replace the conventional skip pockets and serve the same dual purpose, namely, to measure a predetermined load of mineral, and discharge it into the skip. These are situated side by side, adjacent to the shaft.

Each 24-ft. long plate feeder is mounted on six 4-ton, type 04-00, Elliott load cells, which operate an electric current to control the weight of mineral to be discharged into the skip. The loading cycle is automatically controlled, and the discharge cycle is under the control of the onsetter. The plate-feeders are driven by two-speed hydraulic motors. The mineral is fed via the traversing chute to one of the plate feeders running at low speed (12 ft./min.). When the weight of mineral on the plate feeder reaches the predetermined load of 4 tons, the electrical control circuit operates, causing the traverser chute to move over, feeding mineral onto the adjacent plate feeder. Each plate feeder is fitted with a

FIG. 9.—VIEW OF THE HIGHLY CONGESTED NO. 2 PIT TOP AREA PRIOR TO REORGANIZATION.

hinged safety curtain at the discharge end, which stops the plate feeder when partially litted by the mineral.

When the skip is in position, the onsetter pneumatically lifts the safety curtain to its maximum position, starts the plate feeder at high speed (105 ft./min.) and discharges the mineral into the skip. The conveyor continues to run at this speed until the skip, on leaving the loading position, operates an in-line valve, which stops the conveyor and permits the safety curtain to fall to its original position. This in turn releases the pneumatic circuit controlling the plate feeder motor, which then restarts at low speed in readiness for the next loading cycle.

The control cabin is situated above the plate feeders giving the onsetter a clear vision of the two weight recorders, the traversing chute, and the plate feeders. From this cabin the onsetter has control of all equipment from the cable belt to the pit bottom.

The spillage from the skips is collected in a hopper installed in the shaft at a point 68 ft. below the coal-winding inset. A Sutcliffe G.R.6 30-in. conveyor is installed in the 1-in-4 spillage drift, with the tail end extending into the shaft and underneath the hopper. This conveyor delivers the spillage to a short BJ-D type R.9 conveyor, which transfers it to the main 36-in. conveyor in No. 2 pit bottom.

Owing to the limitations imposed by the size of the shaft (14 ft. dia.) and the small steam winding engine, the skips could not be of large capacity. However, this is compensated for, to some extent, by a rapid winding cycle. The skips are of 4 tons capacity, and are of the bottom-discharge type with guillotine doors. Incorporated in each skip is a manriding deck capable of carrying 16 persons, or one tub of material. The comparative winding cycles and loads for cage and skip winding are set out in Table 2, from which it will be seen that the skip installation increased the shaft capacity from 240 to 360 ton/hr.

TABLE 2.—*Comparative Winding Cycles and Loads for Cage and Skip Winding.*

	Cage winding.	Skip winding.
Decking	20 secs.	—
Loading skips	—	15 secs.
Winding time	25 secs.	25 ,,
Total	45 ,,	40 ,,
Pay load	3 tons	4 tons
Total load	8.3 ,,	8.0 ,,

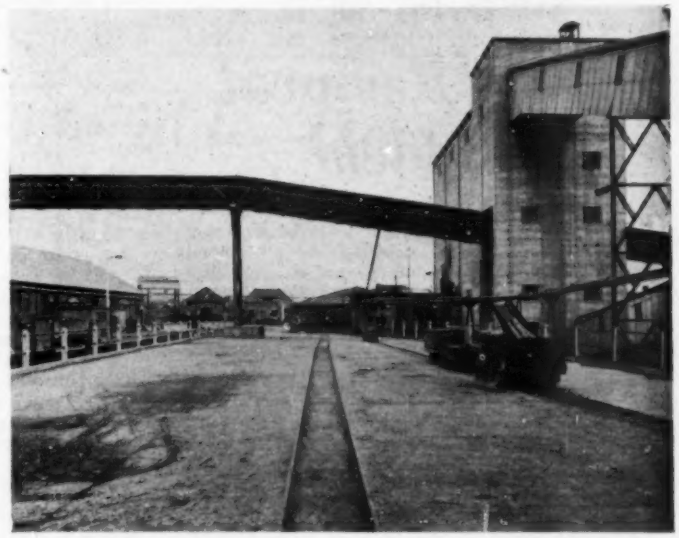


FIG. 10.—VIEW FROM NO. 2 PIT TOP AFTER REORGANIZATION.

Fig. 8 shows the surface winding and screening arrangements following reorganization and Figs. 9 and 10 give a comparison of the effects of the reorganization at the surface. The skip discharges directly onto a 48-in. plate feeder. From the plate feeder the mineral travels on a 42-in. belt conveyor to the primary screens. The combined primary screening unit produces three size ranges, namely, 0 to ½ in., ½ in. to 6 in., and over 6 in.

The over 6-in. mineral passes directly onto a 39-ft. dia. circular picking table, where stone is separated. The clean coal goes direct to wagons or lorries and the dirt to a Kue-Ken jaw-type crusher and thence to the dirt-disposal system.

The ½-in. to 6-in. mineral is conveyed to the washery while the 0 to ½-in. untreated product is conveyed to a 20-ton capacity hopper which discharges to wagons or lorries. Should this product be too dirty to be sold as untreated smalls or there are no wagons, provision is made for the transfer of this mineral to the washery, which has adequate storage capacity in two 250-ton bunkers.

The plate feeders, skip plant, and screening equipment were manufactured by Plowright Bros., Limited, Chesterfield, and installed by colliery labour under the supervision of the manufacturers.

WORK ON A NEW No. 4 blast furnace at the Newcastle Works, New South Wales, has been started by the Broken Hill Proprietary Company, Limited. The cost will be about £7.000.000. No. 2 battery of coke ovens is being rebuilt, and construction has started on the basic oxygen steelmaking plant at the works.

SAMUEL FOX SOLVES

Scale Removal Problem

SCALE formed in the production of stainless and other high-quality steels is valuable, as it contains a high proportion of expensive alloying metals such as molybdenum, vanadium, cobalt, and chromium. Its recovery, however, is highly problematical, as most of it is removed from the steel billets as they pass through the primary and intermediate mills.

The problem has been solved at the Stocksbridge Works of Samuel Fox & Company, Limited, by the installation of specially designed recovery grabbing cranes in the scale pit beneath the new intermediate mill. The plant was designed and installed by Michael & Partners, Limited, Chesterfield.

The pit was so designed that scale, falling from the rolls of the billet mill, is sluiced down by water over a weir and into a settling pit. One of the two crane-operated grabs then dredges the pit and lifts the scale into a waiting skip. The cross-section of the pit is such that the width of the flat bottom is only 2 in. more than the full width of the grabs, thus ensuring almost complete recovery.

The grabs are of the self-trimming type, originally designed for the complete unloading of coal from railway wagons to obviate hand trimming, so that almost every particle of scale that lies in the course of the grabs' jaws is removed. The self-trimming characteristic of the grabs enables them to cover almost all the bottom area between the baffle boards without danger of displacing them.

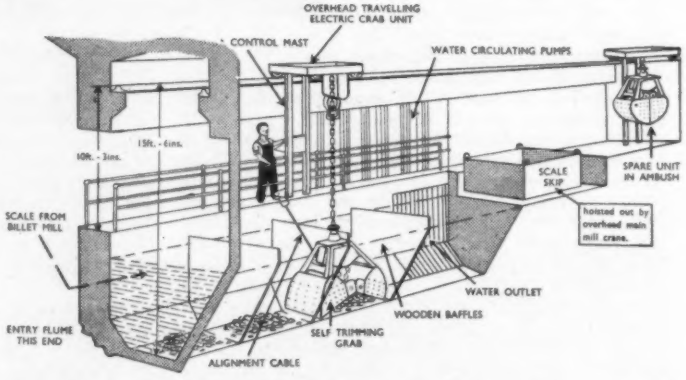
One difficulty encountered in the design of the equipment was the very low headroom available. Grabs of the special ring-discharge type were designed having a fixed discharge height, but a variable loading height.

The grab hoisting and traversing motions are controlled from a push-button panel, of Geipel manufacture, mounted on a fabricated mast, attached to the crab frame, and easily operated from the walkway extending along one side of the scale pit. The motions indicated on the panel are:—Hoist and lower; travel right and left, with an over-riding stop.

The grabs are of mild steel all-welded construction, with hard facing on clamshell jaws, which pivot on high-tensile pins running in steel taper wedge bushes. The grab arms are of special flexible design and terminate in a double pivot top pulley box centralized by extended interlocking fingers. As the grabs lift the scale from under water, the clamshells, crosshead, and pulley box are self draining. The grabs have 4 to 1 reeving and a special chrome molybdenum alloy chain is used with precision cast-steel chain wheels and special automatic locking mechanism. A high-pressure greasing system with water repellent grease is used.

The grabs have a level struck capacity of 7.5 cu. ft. and an unladen weight of 17 cwt. Each grab is suspended from a special electric overhead travelling crab unit supplied by Geo. W. King, Limited, Stevenage (Herts). These crab units, complete with travelling control mast, are of the over-slung four-wheel type incorporating a "Mammouth" precision chain pulley lifting block and operating on a 6-ft. 6-in. gauge cable, reeled on and off coiling drums into cable ducts alongside the crane track.

Although only four or five grab loads of scale are removed from the pit each working day, Samuel Fox & Company asked for two complete units to be installed so that one could be used as a stand-by.



THIS DRAWING SHOWS THE MAIN FEATURES OF THE SCALE REMOVAL PLANT DESIGNED AND INSTALLED BY MICHAEL & PARTNERS, LIMITED, BENEATH THE INTERMEDIATE BILLET MILL OF SAMUEL FOX & COMPANY, LIMITED, STOCKSBRIDGE.

US Firm's Second 100-ton Electric Furnace

A second 100-ton electric furnace, scheduled to be operating within the next 12 months, is being installed by Lukens Steel Company, Coatsville, Pa. The installation, costing about $6,250,000, will, according to a report in Steel, include a scrap-handling area, a mould-stripping building, and a mould storage and preparation building. United Engineers & Constructors Inc., Philadelphia, will erect the furnace adjacent to a similar unit installed early in 1959 and forming part of a $33,000,000 expansion programme then completed. The new furnace will add 180,000 tons to the present annual electric steel output.

ISI SPECIAL MEETING

A Memorable Tour

18 Canadian and US Works Visited

by C. W. J. CRAWFORD

(Metallurgical Editor)

QUICK and comfortable are words that can fairly be used to describe the return flight across the Atlantic last week at the end of the memorable special meeting of the Iron and Steel Institute in Canada and the United States. Visits to 18 Canadian and American works, along with many social activities and a little sightseeing, we recrowded into three weeks. There was little time for reflection then, and even now, having been back home for a week, it is not easy to be categorical in stating one's impressions of a very worthwhile tour.

For the moment then, I will sum up my impressions of the steel industry on the other side of the Atlantic quite briefly. The industry is currently very much concerned with the exploration of the rapid developments in seven fields. They are:—(1) The use of pelletized taconite ores in the blast furnace; (2) fuel injection in the blast furnace as natural gas, oil, or pulverized coal; (3) double reduction of sheet for tinplate; (4) open-coil annealing; (5) continuous annealing; (6) continuous galvanizing; (7) continuous aluminizing.

The various steel companies were very willing to impart information to the Iron and Steel Institute visitors, an indication of their appreciation of the friendly way in which staff from their companies have been received in works in Great Britain and on the Continent.

Safety Principles

Another impression was of the effort made in the American works to put across to the operators the principles of safety first and, to a less extent, of operating policy for high productivity and quality. Posters emphasizing these aspects of work were prominently displayed in all departments.

"Know the Hazards; Don't Learn by Accident," and "We Replace Goggles—Not Eyes" are examples of the slogans used to stress the safety factor. Posters concerning policy were less frequently displayed, but one firm had a number of them headed "Men—Money—Machines; All at Work for All of Us."

The poster for the sheet temper mill gave the following information:

Investment of approximately ..	$154,410
Monthly capacity	11,153 tons
Provides work for	21 people
Operating cost approximately ..	$31/hr.

Purpose of the unit—to apply correct temper and improve the flatness and surface finish of the sheet.

A slogan, in large lettering a short distance away stated: "An Excuse for Poor Quality is a Poor Excuse."

From Warren, Pa, to Washington, D.C.

My notes in last week's IRON AND COAL ended with a description of our visit to the National Forge Company.

Having come deep into the quiet countryside of Warren, Pa., to the unique works of National Forge and having been hospitably entertained by that company on the previous evening, we were all loth to leave. However, we left our motels—duly impressed by the high standard of their service—and boarded a bus for a 45-mile ride to Bradford Airport for a charter plane flight to Washington, D.C. The weather was ideal for viewing the terrain below.

When we touched down at Washington National Airport early in the afternoon we found a guard of honour in attendance for the departure of Mr. Kennedy to New York. After a few minutes' wait we saw the President step from a helicopter and enter his plane.

The bus journey to our hotel was full of interest. We had already seen many of the famous buildings of Washington from the air and now passed close by the Thomas Jefferson Memorial, the Washington Memorial, and the White House. Most of us soon left our hotels to make a short sightseeing tour, which took in the Capitol, the Library of Congress, and the US Supreme Court.

The largest steel plant in the US, the Sparrows Point plant of the Bethlehem Steel Company, was our scheduled visit for the next day. It is situated 40 miles from Washington, on the coast near

Baltimore, and is really too big to see in one day; we therefore selected certain departments for special attention.

Of its four open-hearth shops we saw the No. 4 shop, the most modern one. It has seven furnaces of 385 tons capacity and is in process of changing from normal open-hearth practice to roof-oxygen-lancing practice. A 350 ton/day oxygen plant will go into commission shortly. Two furnaces are already using oxygen and have a tap-to-tap time of 6 hr. 20 min., compared with 9 hr. 20 min. previously, and the average fuel consumption has fallen from about 4,000,000 to 1,800,000 B.t.u./ton.

As it has become obvious that when all the furnaces are equipped to use oxygen, the casting pit operations will have to be speeded up; several changes to this end are in progress.

Turn-round of Ladles

The turn-round time of ladles will be improved by installing one or two small jib cranes at the back of the furnace stage to service the ladles without interfering with the normal crane operations in the casting pit. Also, because the more frequent use of ladles will mean hotter working conditions when making-up ladle nozzles, a special protection cage had been brought into use. It is a vertical cylinder of steel lined with brick with the bottom end partially closed, but having two openings through which the pitman can make up a nozzle while shielded from radiant heat of the ladle interior. This cage will be lowered into the ladle by the jib cranes on the furnace stage.

As at practically all the plants visited on this tour, the immersion thermocouple in use at this shop was of the easily maintained expendable-tip type.

The consensus of opinion is that although these units are more expensive than the conventional design made and re-made in the shop, the saving in maintenance work and the greater reliability of the temperature measurement amply justify their use. The temperature measurement of control practice appeared very thorough, some 12 measurements being made per heat between melt-out and tapping.

Other sections of the plant visited were the 45-in. by 90-in. slabbing mill, 160-in. plate mill, butt-weld pipe mill, electric weld pipe mill, 68-in. hot-strip mill, and the processing lines. All these were efficient mass-production units. The strip mill had created a record in March this year by rolling 4,346 tons in 8 hr. A good proportion of the hot-mill product is sold in coil form without further processing and such coils are uncoiled and passed for several yards with the strip surface in a vertical plane and floodlit for inspection, and then coiled again. There is also a large demand for tinplate in coil form and much of this is for coils weighing 20,000 lb. To meet this demand coils in the annealed condition are joined by a modern butt-welding machine that makes a joint little different in thickness from the rest of the strip.

The production of extra thin tinplate is now on a commercial basis at Bethlehem Steel and the facilities for this are likely to be expanded. At present it is produced by an additional cold-reduction mill.

American tinplate producers are convinced the market for extra thin sheet is a growing one. How thin will sheets be rolled eventually? The probability of tinplate 0.004 in. thick being produced economically is not ruled out.

After a week of works' visits the prospect of Saturday and Sunday with no set programme and the chance of seeing the White House and other famous buildings in Washington was welcomed by almost everyone. The exceptionally fine weather continued; in fact, it became even sunnier and hotter, with day temperatures of 80 deg. F. and night temperatures of 75 deg. F.; it was, however, a little too humid to be ideal.

On the Sunday afternoon most members joined in a sightseeing tour to Mount Vernon. The journey there, about 15 miles, was enjoyable, being along the river Potomac and made in a comfortable motor coach with an efficient refrigeration air-conditioning system: the outside temperature was 80 deg. F. Mount Vernon was the home of George Washington and is now kept as a memorial to him. Having visited it on a sunny autumn day we could readily accept that "no estate in United America is more pleasantly situated than this"—the words of Washington himself in a letter to a friend.

We had now come to the end of the main Iron and Steel Institute tour, but a considerable number of us had decided to do an extended tour. This included visits to plants near Cincinnati and Chicago. We left Washington in a heatwave, but as our plane neared Charleston, a scheduled stop of the flight, we were informed that it was too stormy to land. The plane continued non-stop to Cincinnati where the weather was clear and we arrived ahead of schedule. The temperature was 40 deg. F., compared with 80 deg. F., at Washington when we left.

Unusual Plant Layout

The Armco plant at Middletown, Ohio, which we visited next day, is rather unusual in its layout. Its principal units, that is, coke ovens and blast furnaces, open-hearth furnace shops, electric furnace shop, slabbing mill and hot-strip mill, cold mill, and finishing lines are not only well spaced out but are interspersed with pleasantly wooded housing estates; nevertheless, road communication between them is good. We went first to the coke ovens and ironmaking plant. Here we were reminded of the severe winter climate of the area, which necessitates the provision of equipment for thawing out truckloads of frozen coal and other raw materials. Thawing out at the coke plant was done conveniently, burning coke-oven gas at openings in the centre of the rail tracks under the wagons. Similar arrangements were used at other parts of the plant, oil or natural gas being used sometimes instead of coke-oven gas.

There is one blast furnace and the output of this is supplemented by iron from Armco's blast furnace and coke-oven plant at Hamilton, 13 miles

away. It is a modern furnace of 28 ft. dia. and the present operating practice is typical of the present trend in America to use pelletized taconite ores of the Lake Superior district. These pellets of over 60 per cent. iron constitute 85 per cent. of the burden and are found to give steady operating conditions on this Armco furnace.

A record output of 88,268 ton/month was obtained in June, which included a world record figure of 2,940 ton/day. This is a remarkable performance even taking into account the favourable burdening of the furnace which, in addition to the iron-rich pellets, includes some 6 to 7 per cent. metallics as borings and mill cinder and necessitates a slag make of only 750 lb./ton.

Unique O-H Charging System

Five of the six open-hearth furnaces were working in the No. 2 shop which we visited. They were of 300-ton capacity, built with flat suspended basic roofs and equipped with two roof oxygen lances. The fuel arrangements were very flexible, it being possible to use oil, tar, coke-oven gas, and natural gas. Oxygen injection averaged about 900 cu. ft./ton of steel produced and the production rate ranged from 35 to 40 ton/hr. This open-hearth shop has a unique method of bringing in the scrap required. The method, devised by the company, is comprised by scrap bogie railroads underneath the furnace stage to points between each furnace. Loaded scrap bogies, four boxes on each, are shunted to these points, then raised hydraulically together with a section of the railroad and aligned with the railroad track which passes in front of the furnaces. From this point a bogie is run in front of the furnaces, the four boxes emptied and the boxes and bogie returned below stage without interrupting or being interrupted by the flow of materials to other furnaces.

A feature of slab mill and strip mill practices of some interest is the variation in practices as regards rolling direct from slab to strip without reheating.

At least one of the strip mills we visited operated entirely on reheated slabs, but this Armco 80-in. strip mill rolled practically all slabs direct to strip, the slabs being first hot deseamed.

The visit to the Inland Steel Company's Indiana Harbor Works was enjoyable, if only because of the optimism one found there regarding demand for steel sheet. This company has taken a leading part in the use of continuous galvanizing lines and currently has four operating to full capacity. These lines are capable of producing sheets coated with zinc, aluminium, or a silicon-aluminium alloy. Apart from the demand from the motor industry galvanized sheet is in strong demand for washing machines and culverts, the latter demand stemming from the large projects for motor road construction of the USA.

For the most of us the last visit of the tour was the one to the Youngstown Sheet & Tube Company, Indiana Works, East Chicago, on the day we were due to leave for home. By this time, having had three weeks of works' visits, it required something out of the ordinary to attract our attention. This was provided by the six-stand cold-reduction mill which this company installed in May this year.

The first of its kind, this mill has already shown several advantages. It has a high production rate, the cold-rolled product is unusually flat and is therefore relatively trouble-free in the continuous annealing line. It is possible to reduce sheet to 0.0045 in. thickness.

This company is also establishing itself for what is known as double-reduced tinplate and is at present using three passes to accomplish this. The sheet is tinned after the second reduction, a practice which now appears to be accepted by the can manufacturers because the sheet surface is more suitable for soldering.

We left O'Hare Airport, Chicago, at 6.5 p.m. local time on a D.C.8 jet. Having advanced our watches 1 hr., we reached Idlewild Airport, New York, in good time for our charter plane for London, a Britannia turbo-prop, which left at 11 p.m. It was necessary to advance our watches 5 hr. and it was 1.10 p.m. when we arrived at London Airport on Thursday of last week. The return flight had been in keeping with the arrangements throughout the tour—smooth and pleasant and in good company. The ISI is to be congratulated.

New Manufacturing Facilities for Power Presses

NEW facilities for the manufacture of power presses and associated equipment have been completed at the Scotswood works of Vickers-Armstrongs (Engineers), Limited, Newcastle-upon-Tyne, to satisfy the increasing demand for presses designed by the Clearing division of US Industries, Inc., manufactured by Vickers-Armstrongs (Engineers), Limited, and sold in the UK under the name British Clearing by the Rockwell Machine Tool Company, Limited.

The division also manufactures associated equipment, including Vickers-McKay metal-processing equipment.

Work formerly carried out at two different plants has been consolidated into one and a considerable investment in new plant and equipment has been made by Vickers in order to increase productive ability and efficiency. The division occupies about 22 acres, and the works is equipped to fabricate up to 12 in. thickness of plate and has produced welded structures up to 100 tons in weight.

Survey of Tinplate Industry

Latest addition to the series of special review numbers published by the Metal Bulletin, Birkett House, 27, Albemarle Street, London, W.1, is entitled "Tinplate Review." It is a world-wide survey of the tinplate industry, and includes authoritative articles, statistics, illustrations, and a directory of world tinplate producers. The articles include a review of production capacity by Dr. W. E. Hoare, of the Tin Research Institute. The price of 7s. 6d. includes postage.

Forthcoming Events

NOVEMBER 20

Institute of Marine Engineers (South Wales Section):—Meeting at the South Wales Institute of Engineers, Park Place, Cardiff, at 6 p.m. "Marine Machinery Breakdowns," by J. H. Milton.

Institution of Electrical Engineers (Sheffield Sub-centre):—Meeting at the Angel Hotel, Brigg, at 7 p.m. "A General Theory of Depreciation of Engineering Plant," by D. Rudd.

Institution of Electrical Engineers:—Meeting at Savoy Place, London, W.C.2, at 5.30 p.m. Discussion on "Electrical Accidents and their Causes, including the Legal Aspects."

Institution of Mechanical Engineers (Industrial Administration and Engineering Production Group):—Meeting at 1, Birdcage Walk, London, S.W.1, at 6 p.m. Discussion on "Mechanical Handling of Small Parts with Special Reference to Automatic Assembling Equipment."

Royal Society of Arts:—Meeting at John Adam Street, Adelphi, London, W.C.2, at 6 p.m. Cantor Lecture: "Exports and the Country's Economy," by J. L. S. Steel, chairman, Overseas Trade Policy Committee, Federation of British Industries. Tickets from the secretary.

Institution of Production Engineers (Coventry Section):—Meeting at the Craven Arms Hotel, High Street, Coventry, at 7 p.m. "Technique on Fine Boring," by J. R. Judkins.

NOVEMBER 21

Combustion Engineering Association (Southern Region):—Meeting at the Criterion Restaurant, Piccadilly Circus, London, W.1, at 10.30 a.m. "Coal Handling from Store to Boiler," by F. S. Stent.

Institution of Production Engineers (Manchester Senior and Graduate Sections):—Meeting at the Reynolds Hall, Manchester College of Science and Technology, Sackville Street, Manchester, at 7.15 p.m. "Application of Metal Deposition," by W. E. Ballard.

Institution of Production Engineers (Luton Section):—Meeting at the Halfway House, Dunstable Road, Luton, at 7.30 p.m. "Static Switching Applied to Machine-tool Control," by W. G. Turner.

Institution of Electrical Engineers (Measurement and Control Section):—Meeting at Savoy Place, London, W.C.2, at 5.30 p.m. Discussion on "The Precision Required in the Calibration of Industrial Instruments," opened by P. M. Clifford and A. Felton.

Institution of Mechanical Engineers (Northern Ireland Branch):—Meeting at Belfast College of Technology, at 6.30 p.m. Repetition of James Clayton Lecture: "Machine-tool Research, Design, and Utilization," by Dr. D. F. Galloway.

NOVEMBER 22

Mining Institute of Scotland:—Meeting in conjunction with the Glasgow Mining Students' Society at the Royal College of Science and Technology, George Street, Glasgow, C.1, at 6 p.m. "Safety in Mines," by H. H. Wilson, deputy production director, Scottish Divisional Coal Board.

Midland Counties Institution of Engineers:—Meeting at the Mines Rescue Station, Ashby-de-la-Zouch, at 3 p.m. "The Development of the Dawson Miller Stable Hole Machine," by G. B. Dawson and L. J. Mills.

Institute of Fuel:—Meeting at the Royal United Service Institution, Whitehall, London, S.W.1, at 5.30 p.m. "The Effect of Operating Conditions on the Performance of Different Types of Oil Burner," by L. E. Reed and S. C. Wallin.

Institution of Locomotive Engineers (Scottish Centre):—Meeting at the St. Enoch Hotel, Glasgow, at 7 p.m. "Control of Diesel Locomotives," by O. Schaepfer.

Institution of Production Engineers (London - Brighton Group):—Meeting at A.P.V. Company, Limited, Manor Royal, Crawley (Sussex), at 7 p.m. "A Review of New Techniques in the Manipulation of Metals," by G. G. Dewsnap.

Institution of Mechanical Engineers:—Meeting at 1, Birdcage Walk, London, S.W.1, at 6 p.m. James Clayton Lecture: "Reflections on the Institution's Role in Engineering Education," by Prof. E. Giffen.

NOVEMBER 23

Institute of Fuel (North-Eastern Section):—Meeting at the Cleveland Scientific and Technical Institute, Corporation Road, Middlesbrough, at 5.30 p.m. "Steelworks' Practice," by Dr. S. G. Cope.

Institute of Fuel (Northern Ireland Group):—Meeting at the Lecture Theatre, David Keir Building, Queen's University, Belfast, at 7.30 p.m. Informal discussion groups.

Institution of Plant Engineers (Merseyside and North Wales Branch):—Meeting at the Blossoms Hotel, Chester, at 7.15 p.m. "Refractories for Boilers and Furnaces—Construction and Maintenance," by M. Ash and N. W. Hinchliffe.

Institution of Plant Engineers (North East Branch):—Meeting at Stockton-on-Tees, at 7 p.m. "Design and Installation of Gas and Chemical Plant," by a representative of the Power-Gas Corporation, Limited.

Institution of Plant Engineers (Sheffield Branch):—Meeting in Sheffield, at 7.30 p.m. 'Standards and the Plant Engineer," by H. Stafford, standards engineer, United Steel Companies, Limited.

Institution of Mechanical Engineers (Eastern Branch):—Meeting at the University Engineering Laboratory, Cambridge, at 7.30 p.m. Repetition of the James Clayton Lecture: "Reflections on the Institution's Role in Engineering Education," by Prof. E. Giffen.

Institution of Mechanical Engineers (Scottish Branch):—Annual dinner and visit by the president of the institution, Sir Kenneth Hague, at the Central Station Hotel, Glasgow, at 7 p.m.

Institution of Mechanical Engineers (Southern Branch):—Meeting at the College of Technology, Anglesea Road, Portsmouth, at 7 p.m. "Electrical Aspects of Induction Heating and Melting," by R. Buckley.

NOVEMBER 24

North East Coast Institution of Engineers and Shipbuilders:—Meeting at the Mining Institute, Newcastle-upon-Tyne, at 6.15 p.m. "An Evolution in Ship Control," by Cmndr. H. E. H. Pain.

Institution of Engineers and Shipbuilders in Scotland:—Joint meeting with the Dundee Institute of Engineers at Dundee Technical College at 6.30 p.m. "The Atom in the Future," by W. R. Wootton.

Institution of Production Engineers (Derby Section):—Joint meeting with the British Institute of Management at the St. James's Restaurant, St. James's Street, Derby, at 7 p.m. "Training Foremen," by D. B. Beynon.

NOVEMBER 27

Royal Society of Arts:—Meeting at John Adam Street, Adelphi, London, W.C.2, at 6 p.m. Cantor Lecture: "Production for Export," by R. M. Geddes, managing director, Dunlop Rubber Company, Limited. Tickets from the secretary.

Institution of Plant Engineers (West and East Yorkshire Branch):—Meeting at the Houldsworth School of Applied Science, Leeds University, at 7.30 p.m. "Basic Electronics in Industry and Commerce," by R. H. Garner.

Institution of Mechanical Engineers (Education and Training Group):—Meeting at 1, Birdcage Walk, London, S.W.1, at 6 p.m. Discussion on "The Effectiveness of Postgraduate Courses," opened by Prof. W. A. Tuplin.

National Association of Colliery Managers

NOVEMBER 21

Yorkshire Branch:—Meeting at the Miners' Welfare Hall, Brodsworth, at 3 p.m. "Manpower Deployment," by J. Claxton-Smith.

NOVEMBER 22

Lancashire Branch:—Meeting at the Manchester Literary and Philosophical Society, 36, George Street, Manchester, at 3 p.m. Lord Robens, chairman of the National Coal Board, will give an address on current affairs in the industry.

NOVEMBER 24

Kent Branch:—Meeting at the Swan Hotel, Deal, at 7.15 p.m. "A New Look at Safety," by W. A. Wood, chief safety engineer, NCB.

Iron and Titanium Ores of Iron Mountain

Information regarding complex iron and titanium ores in the Iron Mountain deposit of Albany County, Wyo, is summarized by the Bureau of Mines US Department of the Interior, in Information Circular 8.037, "Magnetite and Ilmenite Resources, Iron Mountain Area, Albany County, Wyo," available from the Publications-Distribution Section, Bureau of Mines, 4,800 Forbes Avenue, Pittsburgh 13, Pa. First studied by pioneer geologists over a century ago, the deposits of intermixed high- and low-grade magnetite and ilmenite have been mined only superficially—and then only for the titanium in the ilmenite. Recent diamond-drilling by the bureau and the Union Pacific Railroad Company, owners of a large block of mineral rights in the Iron Mountain Area, is reported in 98 pages of appendix. The entire Iron Mountain deposit is estimated to contain nearly 180,000,000 tons of titaniferous magnetite ores.

Over 600 members and guests attended the first meeting of the new session of the Scottish Branch of the National Association of Colliery Managers on October 4 to hear an address by M. François Vinck, director general of the High Authority of the European Coal and Steel Community. Among those welcomed by the branch president (Mr. W. B. Stewart) were Mr. R. A. Moore, president of the Institution of Mining Engineers, who is a member of the branch, Mr. L. R. Milligan, deputy chairman of the Scottish Divisional Coal Board and a past president of the NACM, and other representatives of the divisional board.

EUROPEAN COAL AND STEEL COMMUNITY

Its Structure and Functions

by François Vinck

(Director General, High Authority)

"EARLY this year," said Mr. Stewart, "when the question of whether or not Britain should join the Common Market was not nearly so topical as it is now, M. Vinck and a few of his colleagues visited the Scottish Division. We were so impressed by his ability and wit that it was considered an excellent idea to invite him to address a group of Scottish colliery managers.

"In the intervening period the whole subject has become so much alive and prominent that we feel particularly gratified that arrangements have been made for M. Vinck to come to Scotland."

"Badly Informed About ECSC"

M. Vinck said he was surprised to find, during his earlier visit to the Scottish Division of the National Coal Board, that, even among the higher staff, people were badly informed about the structure and activities of the European Coal and Steel Community. He had expressed the view that it would be beneficial all round if that could be rectified and his address that evening at a meeting of the Scottish Branch of the National Association of Colliery Managers was the outcome. He had no illusions about the enormity of his task of trying to explain in a short address the structure, functions, and activities of such a vast organization as the European Coal and Steel Community.

His purpose was to outline briefly how the ECSC was born, its structure, its achievements, and its significance for the future of the economic, social, and political aspects of Europe. And he hoped to deal with the subject as simply as possible.

The actions taken for a United Europe between the two wars by Briand, Stresemann, Ramsay Macdonald, and Herriot, failed because there was no political will at all and because politicians in every country were still hoping, against evidence, that each country was still able to overcome the growing difficulties by its own means. After the second world war, Sir Winston Churchill made an appeal for unity in 1948 and a European organization for economic co-operation was set up in Paris to deal with the flow of American money sent to Europe under the Marshall Plan. In 1949, a forum of opinion for representatives of the parliaments of Western Europe, known as the Council of Europe, was set up in Strasbourg. Political events in these years revealed weaknesses in European countries. In France it had become clear that to strengthen the voice of the Western countries and to avert a new war it was necessary to take a revolutionary step.

Robert Schuman's Statement

On May 9, 1950, Robert Schuman made a statement to the Press. He said: "The contribution which an organized and living Europe can bring to civilization is indispensible to the maintenance of peaceful relations. Europe will not be made all at once or according to a single, general plan. It will be built through concrete achievements, which first create a *de facto* solidarity. With this aim in view, the French Government proposes to take action immediately on one limited but decisive point. The French Government proposes to place Franco-German production of coal and steel under a common 'High Authority,' within the framework of an organization open to the other countries of Europe."

Schuman continued: "This production will be offered to the world as a whole without distinction or exception, with the aim of contributing to the raising of living standards and the promotion of peaceful achievements. Europe, with new means at her disposal, will be able to pursue the realization of one of her essential tasks, the development of the African Continent. By pooling basic production and by setting up a new 'High Authority,' whose decisions will be binding on France,

Germany, and other member countries, these proposals will build the first concrete foundation of the European Federation which is indispensable to the preservation of peace."

M. Vinck said that Belgium, the Netherlands, Italy, Germany, and Luxembourg agreed immediately to start negotiations, but the UK replied "that it would reluctantly be unable to accept . . . a commitment to pool resources and set up an authority with certain sovereign powers as a prior condition to joining in talks."

On June 22, 1950, negotiations started in Paris under the chairmanship of M. Jean Monnet, who was, in fact, the father of the plan on the economical and technical side, M. Schuman, Minister of Foreign Affairs, being the political father. There was, however, a wind of scepticism about the whole project. It was said that the task was too big and that they would never be able to draft a Treaty. When the Treaty was paragraphed on March 19, 1951, it was said that it would never be signed. And when it was signed on April 18 the opinion of the sceptics was that the Treaty would never be ratified by the various parliaments. A handful of determined men believed in the necessity and the urgency, and they brought it to fruition, supported by the more progressive employers' and workers' representatives.

Even after the ratification, however, there was still some hope for the sceptics: the High Authority must be set up and the Common Market must be opened six months after the establishment of the High Authority. "Could that be achieved?" it was asked. It was all done within the presribed time and the project thus came into being.

Basic Principle

The basic principle was the creation of a Common Market for coal, iron, ore, and scrap iron and steel between the six member countries. It meant the abolition of trade barriers (customs duties, quota and currency restrictions, discrimination in transport rates) and the abolition of dual pricing. It meant the submission of all producers as well as buyers in the Common Market to common rules of "fair" competition (regulated competition). It also meant the achievement of economic expansion and social progress by means of a high rate of productive investment and the creation of a special body entrusted with the operation of the Common Market—the High Authority.

The speaker explained that the High Authority was composed of nine members appointed for six years and chosen for their general competence. Eight of the members were appointed by the Governments and one member was elected by the other eight. The High Authority acted by vote of a majority of its members. It took decisions, formulated recommendations, and issued opinions. Decisions were binding in every respect. Recommendations were binding with respect to the objectives which they specified, but left to those to whom they were directed the choice of appropriate means for attaining these objectives. Opinions, although not binding, could be very important.

Decisions, recommendations, and opinions of the High Authority must be fully explanatory, and must refer to the advice which the High Authority was required to obtain either from the Consultative Committee or from the Council of Ministers, or from both. When such decisions or recommendations were individual in character, they were binding on the interested party upon notification. In other cases they took effect automatically upon publication.

The Consultative Committee of 51 members comprised 17 producers, 17 employers, and 17 consumers or dealers. Members of the committee were appointed in their individual capacity for a period of two years; in principle, therefore, they were independent of their organization. Whereas the High Authority might consult the committee on all matters it deemed proper, it was required to do so whenever such consultation was prescribed by the Treaty.

The Council of Ministers of six members had been created with a view to harmonizing the action of the High Authority and that of the Governments, which were still responsible for the general economic policy of the six countries. The council might also request the High Authority to examine any proposals and measures which it might deem necessary or appropriate for the realization of the common objectives. Voting was by an absolute majority of four to two, including the vote of the representative of one of the States which produced at least 20 per cent. of the total value of coal and steel produced in the Community, unanimous agreement, and a majority of the total membership (simple majority).

The Assembly (European Parliamentary Assembly), consisting of representatives of the people of the member countries, was exercising supervisory powers. It was working with commissions just like the national parliaments. A motion of censure on the annual report of the High Authority could be introduced and if it were adopted by two thirds of the votes cast, representing at the same time a majority of the total membership, the members of the High Authority must resign in a body.

The function of the Court was to ensure the rule of law in the interpretation and application of the Treaty and the regulations for its execution. It was composed of seven judges, two Court advocates, and one clerk (greffier). The Court had jurisdiction over appeals by a member State or by the Council of Ministers for the annulment of decisions and recommendations of the High Authority on the grounds of lack of legal competence, major violations of procedure, violation of the Treaty or of any rule of law relating to its application, or abuse of power. However, the Court might not review the High Authority's evaluation of the situation, based on economic facts and circumstances, which led to the decisions or recommendations except where the High Authority was alleged to have abused its powers or to have clearly misinterpreted the provisions of the Treaty or of a rule of law relating to its application.

M. Vinck outlined the general duties of the Community as:—Regular supply from the Common

Market with coal and steel; equal access of consumers to the various sources of production throughout the market; highest possible yield of industrial equipment; research on production, consumption, medicine, health, and security; lowest possible prices of products; encouragement and financial help to rational investments; encouragement to international trade; improvement of living conditions for the working class.

Powers of the High Authority

Financially the High Authority was independent of the Governments, since it levied its resources directly on coal and steel produced in the Community. It could impose fines on firms which did not respect the provisions of the Treaty or the decisions or recommendations of the High Authority. The decisions of the High Authority imposing financial obligations on enterprises had executive force and must be put into forced execution on the territory of member States by means of the legal procedure of each State.

The High Authority had powers of consultation with Governments, enterprises, workers, consumers, and dealers. It might gather such information as might be necessary to carry out its mission. It might also have the necessary verification carried out. The High Authority might facilitate the carrying out of investment programmes by granting loans to enterprises or by giving its guarantee to other loans which they obtained.

The High Authority was organizing contacts among existing research organizations. It was financing programmes on medical and security research, also technical research for the best use of coal and steel. The results of the research were placed at the disposal of all the interested parties in the Community.

For the first time in an international Treaty, there were special provisions for the workers by granting non-repayable assistance as a contribution to the payment of compensation to tide the workers over until they could obtain new employment, the granting of resettlement allowances for the workers, and the financing of technical retraining for workers who were led to change their employment.

In case of manifest crisis the High Authority could establish a system of production quotas and limitation on import. In case of shortages it could allocate the resources of the Community among the member States according to the rules set down in the Treaty.

The Treaty prohibited:—Unfair competitive practices, in particular temporary or purely local price reductions, the purpose of which was to acquire a monopoly within the Common Market; discriminatory practices involving within the Common Market the application by a seller of unequal conditions to comparable transactions especially according to the nationality of the buyer. The High Authority had the power to define the practices covered by this prohibition and also prescribed the form and the extent in which price-lists and conditions of sale must be published. It might fix for one or more products, maximum or minimum prices, while it could authorize compensation schemes among enterprises of the same coalfield or even among enterprises situated in different coalfields.

Cartels were forbidden, but the High Authority had the power to authorize agreements to specialize in the production of, or to engage in the joint buying or selling of, specified products under certain conditions. Generally speaking, all concentrations must be submitted to prior authorization of the High Authority and it even had the power, if the interested parties failed to fulfil their obligations, to take steps to execute its decisions and it could enable the member States of the interested enterprises to executive the measures provided by it. In addition, the High Authority had indirect powers in transport, commercial policy, and wages.

M. Vinck then went on to outline some of the consequencies resulting from the existence of the European Coal and Steel Community. Trade recessions in the United States, he said, were no longer followed by recessions in continental Europe. European integration had led to a marked increase in economic expansion, which was increasingly self-supported; this fact was already clear by 1955, when the new Communities (EEC and Euratom) were first talked about and it had been widely confirmed by experience.

Steel Output Expansion

Production of steel was often considered as a touchstone of expansion; in relation to world production, steel production in the ECSC had increased remarkably—faster than in the USSR, for instance—as the figures in Table 1 showed.

The strength of the ECSC lay in the fact that it was no loose international system based merely on occasional co-operation between member Governments. The High Authority acted as an executive body whose decisions made law throughout the six member countries. Its decisions reflected the interests of the Community as a whole and had the tremendous advantage of being irrevocable. This fact accounted, in part at least, for the dynamic development of the Common Market, because producers, workers, and consumers alike knew beforehand that there would be no "turning back of the clock."

The successful existence of the Common Market

TABLE 1.—*Comparative ECSC and UK + ECSC Production of Crude Steel.*

Year.	World.		USA.		USSR.		UK.		ECSC.		UK + ECSC.	
	Million tons.	Per cent.	Million tons.	Per cent.	Million tons.	Per cent.	Million tons.	Per cent.	Million tons.	Per cent.	Million tons.	Per cent.
1953	234.3	100	101.3	43.2	38.1	16.3	17.9	7.6	39.7	16.9	57.6	24.5
1955	270.4	100	106.2	39.3	45.3	16.7	20.1	7.4	52.6	19.6	72.7	27.0
1960	342.0	100	90.0	26.3	65.0	19.0	24.7	7.2	72.8	21.3	97.5	28.5

for coal and steel had been the cause and the basis of the creation of two deeper and wider Communities between the six countries; neither the EEC nor Euratom could exist today if the ECSC had not broken new ground and perfected new lines of action. At the same time, it was clear from the start that no integration could be limited to coal and steel products for an indefinite period. Difficulties, which were not unexpected, arose from the growing discrepancies between integrated coal and steel markets and national economic policies; integration had to be extended gradually to all products or to disappear.

Handling of "Coal Crisis"

What M. Vinck termed "the coal crisis" had been a particular concern of the High Authority since 1958. It was due partly to the slackening in economic expansion in 1958 and early 1959 (no recession such as was experienced in America), partly to the growing efficiency in the use of coal and coke, but mainly to the mounting competition of oil and natural gas. Structural changes were going on in all energy markets of the world, including the USA, the USSR, and the UK.

In May, 1959, the High Authority's overall Community plan to cut production and imports was rejected by the Council of Ministers, mainly for political reasons—undue fear of the High Authority obtaining excessive power. The High Authority then concentrated its efforts on three main points. It urged the reorganization of the Belgian coal industry, where many pits suffered from high production costs. It pushed through a large number of readaptation projects for miners, ensuring that miners who were threatened with the loss of their jobs were given additional financial help and retrained for new jobs. Finally, it attacked the root of the problem by speeding up the co-ordination of energy policy and by promoting the redevelopment of regions affected by the coal crisis; this it did in close co-operation with the EEC.

While this work was being carried out in conjunction with the European and Euratom Commissions, the mandate for preparing proposals for the co-ordination of energy policy was given to the High Authority.

The coal crisis, said M. Vinck, would have been much harder on the producers—and especially on the mineworkers—had the High Authority not been able to intervene swiftly, independently, decisively, and backed by its financial resources. The crisis is now much less acute than it was two years ago, although much remained to be done to reorganize the industries in several of the 11 coalfields of the Community.

Referring to the Council of Association between the United Kingdom and the six Community countries, M. Vinck said that 10 days after arriving in Luxembourg, M. Monnet flew to London to work out the basis of an association between the ECSC and the UK. A week later, a high-level British delegation to the High Authority arrived in Luxembourg. The agreement was signed in December, 1954, and became effective in September, 1955. The permanent council consisted of four members of the High Authority and four Ministers of the UK Government. There were three standing committees on coal, steel, and trade relations. The agreement called for special meetings of the Council of Ministers of the ECSC with members of the British Government in presence of the High Authority. The advantages included the exchange of information on matters of common interest (*e.g.*, prices, subsidies, technical points), discussion of possibilities regarding the abolition of trade restrictions between the two areas, prior discussions of any new restriction contemplated by the British Government or by the High Authority, and, on the longer term, studies to compare coal (and energy) and steel perspectives in both areas.

Conclusions

The speaker, concluding his explanatory remarks, said that, since 1950, the European Community had advanced far towards full economic union. The action of the High Authority and the operation of the Common Market made possible a record expansion in the Community's steel output (increased by over 75 per cent. between 1950 and 1960), a start on the reorganization of the coal industry in circumstances far more favourable than they could otherwise have been, an improvement in the living standards of the workers, who benefit from greater real incomes, better housing, and, through the High Authority's readaptation programme, greater security against unemployment, and the testing and proving of integration on which the full Common Market was to be based.

In turn, the opening years of the Common Market had brought since 1958 a revolution in the industry and commerce of the six countries, a rapid expansion of production and trade, a gradual bringing together of the economic policies of the six countries, a widening of the area of attraction through a process of association which was still going on at the periphery of Europe and in Africa south of the Sahara, and a strengthening of the efforts towards political unity in Europe, thus preparing the way for a more stable balance of world power. Euratom had brought the member countries to the threshold of the atomic revolution with better prospects than they could otherwise have had.

Vote of Thanks

Mr. Chris Inglis, senior vice-president, proposed a vote of thanks to M. Vinck. The lecture had been delivered very clearly and concisely, and he was sure that the large audience would have gained considerably in knowledge of the activities of the European Coal and Steel Community as the result of hearing the address. He thanked M. Vinck for travelling such a long way to deliver what was probably one of the most important lectures that had been given to the Scottish branch for many years.

M. Vinck received rousing applause on the conclusion of his talk and this was repeated when Mr. Inglis called for a vote of thanks.

NEW LITERATURE

READERS wishing to obtain a copy of any of the house magazines, catalogues, brochures, and other publications referred to below should write to the address given, at the same time mentioning this journal.

BRITISH STEEL FOUNDERS' ASSOCIATION, 13, Broomgrove Road, Sheffield 10—"Better Buy Steel Castings"—with the accent on the word steel—is the advice given in a new leaflet issued by the association.

FLUIDRIVE ENGINEERING COMPANY, LIMITED, Fluidrive Works, Worton Road, Isleworth (Middx)—The November issue of Fluidrive News, the 300th in the series, is concerned with "Fluidrive in Guinness Brewery."

INCANDESCENT HEAT COMPANY, LIMITED, Cornwall Road, Smethwick, Birmingham—A reprint of an article on "Pressure Quench at Consett Plate Mill" by J. A. Swain, manager of the company's steelworks plant division, has just been issued.

PARKINSON COWAN INDUSTRIAL PRODUCTS, Dolphin Works, Fitzalan Street, London, S.E.11—A multicolour illustrated leaflet describes the new "Merlin" gas radiant heater, specially designed for commercial use to bridge the gap between domestic and industrial units.

POLLARD BEARINGS, LIMITED, Ferrybridge, Knottingley (Yorks)—The latest range of "Self-lube" ball-bearing units and their application is described in a brochure. Examples are given of the use of the units in the coal, engineering, shipbuilding, and many other industries.

EDGAR ALLEN & COMPANY, LIMITED, Imperial Steel Works, Sheffield 9—The editor writes on "Re-profiling of Work-hardened Railway Carriage and Wagon Wheels" in the November issue of Edgar Allen News, the remaining contents of which are continuations of articles being published in serial form.

BRITISH BROWN-BOVERI, LIMITED, 75, Victoria Street, London, S.W.1—The Brown Boveri Review, an excellent production, is enhanced by the inclusion of a number of full-colour photographs. The latest issue to hand is dated January-February, 1961, and it is devoted to a review of technical progress in the years 1959-60.

HARTONS INSTALLATIONS, LIMITED, Maxim Road, Crayford (Kent)—"Instrumentation by Hartons" is the title of an attractive brochure. Emphasis is given to the team spirit at the works: "Hartons is not run by a collection of 'boffins,' but by men of practical experience in many branches of industry. These men pool their experience and knowledge and in the process discover profit-making solutions to problems of instrumentation and control." The company's services are clearly and concisely outlined.

WAYNE KERR LABORATORIES, LIMITED, 44, Coombe Road, New Malden (Surrey)—An illustrated, 28-page brochure describing 26 models of Wayne Kerr-Gertsch ratio transformers and incorporating seven engineering papers on their theory and applications of this type of instrument is now available. As well as a general introduction to the construction and basic types of ratio transformer, the brochure contains many mechanical drawings, circuits, tables, and detailed technical descriptions of the instruments.

EVERSHED & VIGNOLES, LIMITED, Acton Lane Works, Chiswick, London, W.4—Publication No. 373 describes the Evershed Mark 200 polarograph, shown at the recent Effluent and Water Treatment Exhibition. The instrument has been made more important by the Government's intervention in the permitted level of contamination of rivers. Industries with outpourings of waste liquid will have to control the level of certain impurities in their effluent and this entails frequent measurement. The polarograph offers a fast and accurate method of making chemical analyses and can be used by semi-skilled personnel.

PLESSEY COMPANY, LIMITED, Chemical and Metallurgical Division, Wood Burcote Way, Towcester (Northants)—A comprehensive illustrated brochure (publication No. 387) lists a wide range of ceramic valveholders. Included among the B7G and B9A types is a range of valveholders recently type approved to DEF 5251. Other valveholders listed are the latest B7G and B9A types with the connecting lugs arranged to coincide with the standard piercing on a 0.1-in. grid co-ordinate system now adopted for printed circuits.

INSTITUTION OF WORKS MANAGERS, 196, Shaftesbury Avenue, London, W.C.2—"Good Management at Rugeley" is the sub-title to an article on Lea Hall Colliery in the November issue of Works Management (2s. 6d.). "If good management may be defined as the marshalling of resources to produce the maximum output with the minimum of energy, expenditure, and wastage, then the Lea Hall Colliery in Rugeley, West Midlands, is an excellent example of the application of this industrial virtue," the article states.

ZINC DEVELOPMENT ASSOCIATION, 34, Berkeley Square, London, W.1—The galvanizing section of the October issue of ZDA Abstracts contains an article on the use of galvanized water tanks and the effect of hot, cold, hard, and soft water on the coating. A further abstract reveals that a mathematical expression has been given to the effect on the coating thickness of the rate at which the object to be galvanized is drawn through the molten zinc, while laboratory and pilot plant tests have been carried out in France on the adaptation of the Sendzimir process to the continuous galvanizing of wire and they are outlined in another abstract in the galvanizing section.

INTERNATIONAL NICKEL COMPANY (MOND), LIMITED, Thames House, Millbank, London, S.W.1—The section concerned with heat- and corrosion-resisting materials forms an interesting feature of the September issue of the Nickel Bulletin. Attention is drawn to papers reporting corrosion tests on nickel-containing steels in Canadian and tropical atmospheres and to recent literature covering studies carried out to determine the mechanical properties of stainless steels and the resistance of various nickel-containing materials to specific corrosive media. Worthy of particular note among the items relating to heat-resisting materials is a group concerned with specifications for, recent developments in, and work on, nickel-base turbine-blading alloys.

FEDERATION OF BRITISH INDUSTRIES, 21, Tothill Street, London, S.W.1—Author of "Britain, France, and the Common Market," in the November issue of the FBI Review (2s. 6d.), is Jean-Claude Servan-Schreiber, director general of Les Echos. An introductory note to the article states: "The appointment of Sir Pierson Dixon, British Ambassador in Paris, to head the team of officials which will negotiate on

the UK's entry into the Common Market is a further reminder that it is between France and Britain that the greatest differences on this issue exist." Sir William McFadzean, chairman of the Export Council for Europe, writes on "ECE's First Year." Interesting data are forthcoming from the twelfth FBI survey of industrial and export trends covering the four months June to September, the results showing that during this period there was a significant change in the state of the economy. All these are among many interesting features of the magazine.

ASSOCIATED ELECTRICAL INDUSTRIES, LIMITED, 33, Grosvenor Place, London, S.W.1—Design of large industrial furnaces is governed almost entirely by mechanical considerations. Smaller furnaces, on the other hand, are produced in sufficient numbers to justify the attention of an appearance designer. Careful consideration of the form and function of the equipment and its various parts can lead to a design which is both pleasing to look at and economical to produce. It is, nevertheless, not always possible to justify every detail of a treatment on a strictly logical basis. W. E. Court (AEI-Birlec, Limited) writes on "Furnace Design" in the November issue of AEI Engineering. Other features include an article by J. W. Addie, of the heating and welding department of the AEI transformer division, on "Mild-steel Electrodes for Contact Welding," and "Development of a Motor Terminal Box with Phase Separation," by W. Hill (AEI motor and control gear division).

NATIONAL COAL BOARD, Hobart House, Grosvenor Place, London, S.W.1—If you were tuned in to BBC television on a recent Saturday afternoon you will have seen Walter Hargreaves, musical director of Betteshanger Colliery Band (Kent), conducting massed bands in the Daily Herald national brass band championships at the Royal Albert Hall in London. Nearly a third of the 96 bands in the championships were from collieries or mining areas and between them they took six of the 16 prizes. The story is told in the November issue of Coal News (3d.), which, in the nine editions covering the various NCB divisions, contains many columns, of divisonal and national news, together with articles and photographs.

ISO Recommendations on TESTING OF STEEL

FOLLOWING six recommendations of the International Organization for Standardization (ISO) were announced in the September issue of the BSI News:—

ISO/R 144: REVERSE BEND TESTING OF STEEL WIRE.—Applies to wire having a diameter equal to or greater than 0.5 mm. (0.02 in.). Specifies the principle of test, the type of test-piece, the procedure, the testing machine, and the test requirements. This recommendation substantially agrees with BS 2803, "Oil Hardened and Tempered Steel Wire for Springs," Clause 4c.

ISO/R 147: LOAD CALIBRATION OF TESTING MACHINES FOR TENSILE TESTING OF STEEL.—Applies to the load calibration of machines used for the tensile testing of steel in accordance with ISO/R 82, "Tensile Testing of Steel." The following methods of load calibration are described:—(*a*) By means of weights (masses); (*b*) by means of elastic devices (dynamometers); (*c*) by means of proving devices. When BS 1610, "Verification of Testing Machines" is revised in the near future, this recommendation will agree substantially with its requirements.

ISO/R 148: BEAM IMPACT TEST V-NOTCH FOR STEEL.—Describes the test which consists of breaking by one blow from a swinging hammer a test-piece V-notched in the middle and supported at each end. The energy absorbed is determined. Specifies the types of test-piece, the testing machine, and the test requirements. This recommendation substantially agrees with BS 131, Part 2, "Charpy V-notch Impact Test."

ISO/R 149: MODIFIED ERICHSEN CUPPING TEST FOR STEEL SHEET AND STRIP.—Describes the test consisting of pressing a clamped test-piece into a die by means of a ball or a tool with a spherical end until rupture commences and measuring the depth of the cup. It is applicable to products having a thickness not less than 0.5 mm. and not more than 2 mm. Specifies the type of testing machine, the test-piece, the procedure, and the test requirements. An appendix is included which recommends the type of grease to be used. The UK has opposed this recommendation and no corresponding British Standard exists.

ISO/R 156: CALIBRATION OF BRINELL HARDNESS TESTING MACHINES.—Applies to the calibration of testing machines for determining Brinell hardness in accordance with ISO/R 79 "Brinell Hardness Test for Steel." Specifies both the direct and indirect methods of calibration and gives the requirements for repeatability and error and an assessment of calibration. A British Standard is in course of preparation for calibrating Brinell hardness testing machines.

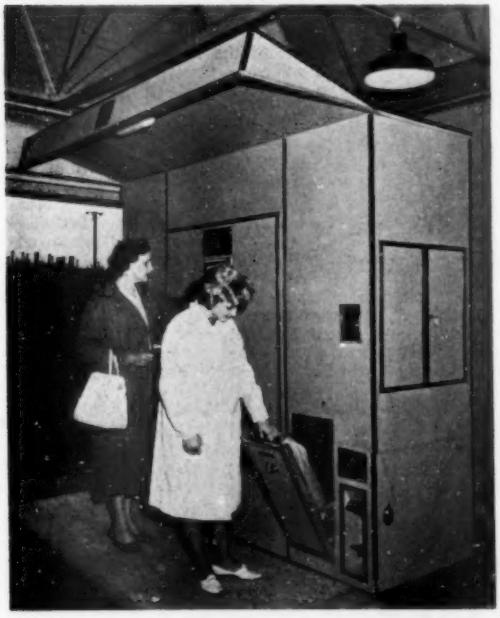
ISO/R 166: DRIFT EXPANDING TEST ON STEEL TUBES.—Applies to the drift expanding test on steel tubes of circular cross-section having an external diameter not greater than 150 mm. (5.9 in.) and a thickness not greater than 9 mm. (0.35 in.). Specifies the principle of test, the type of test-piece, description of test, and the test requirements. This recommendation substantially agrees with the corresponding test shown in BS 1775, "Steel Tubes for Mechanical, Structural, and General Engineering Purposes."

Copies of the six ISO recommendations may be obtained from the BSI Sales Branch, 2, Park Street, London, W.1, at the following prices:—ISO/R 144, 148, and 149, 4s. 6d. each; ISO/R 147 and 156, 3s. 5d. each; ISO/R 166, 2s. 3d.

FUEL VENDING MACHINES

in PLASTIC-COATED STEEL

AUTOMATIC fuel vending machines, new to this country, are shortly to go into use in various parts of the north-west. Finished in an attractive sky blue colour, the machines are clad in plastic-coated steel and offer pre-packed fuel in bags of 14 lb. or 28 lb. Manufactured by Austin Hopkinson & Company, Limited, the Audenshaw (Lancs) mining engineers, the Pikrose "Fuel-O-Matic" has already attracted the interest of the Coal Board and other coal distributors, who foresee a big future for it sited on housing estates, near blocks of flats,



THE PIKROSE "FUEL-O-MATIC" FUEL VENDING MACHINE.

on coal merchants' premises, and as an addition to the services offered by Supermarkets.

Each machine can carry 50 packs and check-weighs every bag before delivering it to the customer.

The first experimental model of the "Fuel-O-Matic" was clad in aluminium, but it was found that it was not a suitable material for external use. Something that would stand up to the rough treatment which an automatic machine often receives was sought and Stelvetite, the plastic-coated sheet steel made by John Summers & Sons, Limited, Shotton, near Chester, was decided upon. Mr. Austin Voorsanger, chairman and managing director of Austin Hopkinson & Company, said: "We wanted a steel backing and also an attractive outside appearance, both of which we got from Stelvetite. The pale blue colour we chose gives the machine good looks."

Stelvetite, the first vinyl-steel laminate made in this country, is produced on either an electro-zinc coated or hot-dip galvanized base. It is available in a large variety of colours and can be handled by the fabricator in the same way as ordinary steel.

SPECIAL MEETINGS OF MINING INSTITUTE OF SCOTLAND

SPECIAL general meeting of the Mining Institute of Scotland, arranged in conjunction with the Glasgow Students' Mining Society, will be addressed by Mr. H. H. Wilson, deputy production director of the Scottish Divisional Coal Board, on the subject of "Safety in Mines." The meeting will be at the Royal College of Science and Technology, George Street, Glasgow, C.1, at 6 p.m. on November 22.

A second general meeting arranged in conjunction with the Cowdenbeath Technical College Mining and Engineering Students' Society, to be held at the college at 6 p.m. on November 29, will take the form of a Brains Trust. Prof. G. Hibberd, president of the Mining Institute of Scotland, will be in the chair, and the panel will consist of:—Dr. H. Hyde, HM Divisional Inspector of Mines and Quarries; Mr. T. D. M. Scrimgeour, Area general manager, Fife Area, Scottish Divisional Coal Board; Mr. James S. Wilson, deputy Area production manager, Fife Area (West), Scottish Divisional Coal Board, and Mr. C. C. Grassie, deputy director of education, Fife.

Both meetings are primarily designed for junior members, such as students and graduates and members of the societies, but all students, whether or not members of the societies or the institute, will be welcomed. It is also hoped that senior members will attend and be willing to contribute to the discussions.

THE SPANISH COMPANY of Altos Hornos de Vizcaya is seeking authorization to install a new battery of 40 coke furnaces and related machinery at a cost of 298,500,000 pesetas at its plant at Sestao. Reporting this, the Bank of London & South America states that the cost of imported equipment would be 95,000,000 pesetas.

Work of Scottish Pit Safety Committees

HOPE that the efforts of all concerned in the drive for greater safety would be reflected in a continued improvement in the accident rate was expressed by Mr. William Welsh, Area general manager, Central East Area, Scottish Divisional Coal Board, at a recent special joint meeting of colliery safety committees in the Lanarkshire district of the Central East Area. Mr. James McKendrick, district secretary of the National Union of Mineworkers, was in the chair, and those present included representatives of HM Inspectorate of Mines and Quarries, associated trade unions, and senior officials of the Scottish Divisional Coal Board.

Mr. Welsh said that the accident trend in the Central East Area over the past three years had shown a steady improvement; he was convinced that the improvement was due in large measure to the work of the colliery safety committees, the work of the safety department, and the publicity directed towards safety matters. The Central East Area had been extremely active in safety matters, he said.

One of the NUM delegates, Mr. James Fyfe, expressed concern at the apparent increase in some of the industrial diseases; he hoped that the efforts of the safety committees would also be directed towards improving this trend as well as the overall accident trend.

Speaking at a meeting at Whitburn on November 4 of joint safety committees from eight West Lothian collieries, Mr. Welsh said that the overall level of accidents in the Area had come down this year compared with last year and 1959, but a disturbing feature was that the fatal accident rate had gone up. "One of the prime causes," he said. "is faulted areas at the coal face." He proposed a new method to tackle faults in an attempt to eliminate accidents.

Instances of problems that had been overcome at Easton Colliery by the joint efforts of the safety committee were given by Mr. D. Munro, manager of the colliery, while Mr. T. R. Samson, safety engineer of the Scottish Divisional Coal Board, outlined the 1962 safety campaign. He said he was very impressed with the enthusiasm of all parties within the Central East Area on the approach to safety. Various other speakers submitted their views to the meeting.

Mr. Alex Moffat, president of the Scottish Area of the NUM, presided at the Whitburn meeting.

AUTHORIZATION TO install a cold-rolling plant at its Avilés factory, Oviedo, Spain, has been received by Empresa Nacional Siderúrgica (Ensidesa). The project will be completed within three years. Oxígeno de Levante has been authorized to install an oxygen producing plant at Barcelona. The installation will take two years.

Correspondence

THE LATE MR. G. O. SYLVESTER, MP

To the Editor of IRON AND COAL

SIR,—In the obituary column of your issue of November 3 is a paragraph relating to the death of Mr. G. O. Sylvester, who is referred to as a former mineworker and a miners' branch official at Sharlston West Colliery—a pit at which he was probably never employed. In mid-1930, when I went to Sharlston Colliery ("the old pit") as manager, he had recently become branch secretary there, a post he held until entering Parliament some 20 years later. We met frequently.

In the Yorkshire area there has, for years, been considerable confusion over the names of these two collieries, now, happily, distinguished by the names of the neighbouring village.

Three or four generations ago, a colliery was sunk about a mile from Sharlston village, towards Normanton. Around it sprang up a mining village, named New Sharlston. The colliery was known as Sharlston or New Sharlston, renowned for a high-quality Haigh Moor coal. The name of the operating company included that of the colliery. Complications began to arise when the firm sank pits at Walton, where serious faulting hampered mining.

The Welsh firm of Richard Thomas & Company, Limited, bought the company as a subsidiary named the "New Sharlston Collieries Company, Limited." The new pit was at Walton, geologically handicapped, while the old pit was at New Sharlston, whose Haigh Moor coal was much sought after, and became labelled by salesmen as "Sharlston Old Pit Wallsend," which was a high-priced house coal. One can understand the confusion arising. It persisted until recently, when the newer pit was officially defined as Walton Colliery (instead of Sharlston West).

Sharlston Colliery lies between the village of that name and Normanton, where the late Mr. Sylvester lived and was highly respected.—Yours faithfully,

J. S. HAYES.

199, Earlham Road,
Norwich,
Norfolk.
November 7, 1961.

International Standards Committee on Cranes

CONFLICTING national standards for materials and equipment can be just as big a barrier to international trade as tariff walls. Nowhere is this more true than in the field of crane manufacture. Most countries (including the UK) have standards for cranes, and at present difficulties arise with the export of cranes from one country to another due, in particular, to the varying methods adopted for rating cranes in respect of their safe working loads.

First step towards unification of these conflicting standards has now been taken. The International Organization for Standardization has set up a technical committee on cranes and excavators. The committee is concerned particularly with terminology, load rating, materials, design, stability, testing, and safety.

Nearly 40 delegates, from Finland, France, Germany, the Netherlands, Poland, Portugal, and the UK, attended the first meetings, the UK being led by Mr. T. E. R. Torrance, chairman of the main technical committee of the Association of Crane Makers.

Exporting to Japan

BRITAIN LAGS IN SELLING TECHNICAL "KNOW-HOW"

GREAT potential market for British machinery and engineering goods of all kinds exists in Japan, the development of which hinges on the prospect of a new commercial treaty with that country, said Sir Norman Kipping, director-general of the Federation of British Industries, on Monday. He added that British industry was missing a "valuable potential income" because of its unwillingness to enter into licence or technical know-how agreements with Japanese companies. Last year, there were 1,509 such agreements, of which only51 were British. In the first six months of this year total remittances from Japan for such agreements totalled $70,000,000.

Sir Norman was introducing a new FBI report, "A Look at Japan," recording his impressions of Japanese industry during a recent three-week tour of the country, in which he was accompanied by Mr. John Whitehorn, deputy oversea director of the FBI. The report is shortly to be supplemented by a market survey of Japan being completed by the Economist Intelligence Unit.

SIR NORMAN KIPPING

British exports to Japan, said Sir Norman, had been rising fast, and were 62 per cent. up in the first eight months of 1961. Anglo-Japanese trade was now running roughly at the rate of £40,000,000-£50,000,000 a year in each direction, but further development depended on the prospect of a new trade agreement which would largely supersede the present annual quota arrangements and under which, subject to safeguards, Britain wou'd cease to discriminate against Japan under GATT.

Needs of Japanese Industry

The report says that given "liberalization" of trade, as seems probable, the main market for British products would be Japanese industry itself. British machine tools are already doing well, but there is a general ignorance of British engineering products and achievements, and persistent salesmanship and promotion will be needed to correct this.

Britain is not obtaining anything like its possible share of technical agreements with Japan on research and know-how. The statistics of approved technical agreements are "startling," and quite out of line with the place of British technology in the world, says the report. "Japanese companies tend to regard British companies as being generally unwilling to enter into licence or know-how agreements with them. In consequence, there is a general scepticism of our having much in the way of technology to sell."

Figures of approved technical agreements with other countries show that the United States has the lion's share of such Japanese trade. but Britain is also well behind West Germany and Switzerland.

"Other countries, above all the United States, have reaped the advantages of a wide familiarity in Japanese industry with their plant. If there is any idea that withholding of know-how can retard the development of Japanese competition, it is, we are sure, an illusion."

Commenting on his visit, Sir Norman said: "I am convinced that Japan is doing her utmost to remove the pre-war reputation she had for goods of low quality. In the 12 factories I visited I saw goods of high quality. The best in Japan is equal to the best in other countries." Piracy of designs, he said, was a thing of the past. "Japan hasn't any need nowadays to be a copyist. She is an originator, and we had better face the fact."

As an example of a potential market for British goods, Sir Norman said that since the Clean Air Act had been introduced into Britain there had been a great development here of equipment and gadgets connected with clean air. "Japan has no such Act, but my guess is that they will have one fairly soon. That would be a big opening for all our people who have become specialists in this kind of product."

At an export conference in Glasgow last week, a picture of missed opportunities in the Middle East was given when British Government representatives in Iraq, Kuwait, and the Sudan told how German, Italian, and Japanese firms were winning increasingly large shares. Mr. P. W. Cranston, economic counsellor, Consulate General, Kuwait, said that while over-all importing had increased, the British share of trade had been declining. British deliveries were "poor, slow and uncertain."

Mr. D. M. Kitching, first commercial secretary at the British Embassy, Khartoum, said Britain had sold £18,000,000 worth of goods to the Sudan last year out of a total import of £30,00,000. To Iraq, Britain sold £30,000,000 worth, compared with £34,000,000 in 1951.

British Uralite Forms New Sales Company

A NEW company, United Roofing Companies, Limited, has been formed by the British Uralite, Limited, group, to co-ordinate marketing and contracting activities for the products of two of the group's subsidiaries, the Cellactite Company, Limited, and the Weatherall Roofing Company, Limited. It will also market the new prefabricated roof decking "Weatherdeck."

The seven directors appointed are:—Mr. G. E. Garrett, Mr. J. W. Honess (managing), Mr. H. W. Kingsbury, Mr. L. W. Maskell (sales), Mr. R. E. A. Munday (technical), Mr. Gordon D. Parker (chairman), and Mr. H. R. Powis. Mr. C. N. Luscombe has been appointed company secretary.

New Welding Technology Department of BWRA

CHANGES in internal administration have been carried out by the British Welding Research Association with the aim of extending the scope of its service to industry, and to enable fundamental work, particularly in arc physics, to develop unfettered.

MR. H. F. TREMLETT

The former welding process and resistance welding sections have been integrated into one welding technology department with wide terms of reference, including the carrying out of research into existing welding methods, promotion of their effective use, selection of processes for particular application, and the provision of basic data for the design of welding plant. The new department, which has extended facilities for investigating all new methods of welding and welding technology, is headed by Mr. P. T. Houldcroft, formerly the association's chief metallurgist. Mr. A. A. Smith, formerly in charge of the welding process section, is deputy head. Control of the metallurgical laboratory is under Mr. H. F. Tremlett, deputy director of research, with Dr. R. G. Baker and Mr. J. G. Young as chief metallurgists in charge, respectively, of ferrous and non-ferrous researches.

Work on the physics of the electric arc, including the development of techniques for controlling and utilizing ultra-high temperature arc plasma and the development of electronic control and monitoring systems, is now under the full control of Dr. A. A. Wells, assistant director of research, who also controls the Association's engineering researches.

Continuous Hot-dip Galvanizing Plant for SCOW

PRELIMINARY site work has started on the £900,000 addition to the Abbey Works of the Steel Company of Wales, Limited, at Port Talbot. A continuous hot-dip galvanizing plant is being installed and when it is finished Wales will have the only installations of this kind in the country. The other plant has been operating at the Ebbw Vale works of Richard Thomas & Baldwins, Limited, for more than three years.

Located in the existing plate-finishing bay where a plate line has been dismantled to accommodate it, the Abbey plant is scheduled to start operating at the end of next year.

CONSIGNMENT OF 270 tons of steelwork, which included 400 pieces of equipment, and was the largest single contract handled by the Crowborough Engineering Works, Limited, Darlington (Co. Durham), has been despatched to Eire for extensions to the works of Irish Steel Holdings, Limited, at Haulbowline (Co. Cork).

BSI Metallurgical Standards Section Formed

TO meet a rising demand for standards and to cope with increased international standards work, changes have been made in the technical directorate of the British Standards Institution. The number of sections handling technical work has been increased from five to seven, the two new ones being concerned with metallurgical and some engineering industries; and safety and consumer standards. Codes of practice work are now combined with building activities.

Former senior technical officer, Mr. R. A. McKinstry has been appointed divisional chief technical officer with responsibility for standards projects in iron and steel, non-ferrous metals, welding, nuclear energy, agricultural engineering, colliery requisites, road engineering, surface coatings (other than paints), and units and symbols. Dr. P. C. Young remains chief technical officer in the chemical division, which includes gas engineering, refractories, and solid fuel.

Extensions to Whessoe Works Opened

ONE of the first public engagements of Mr. F. T. Erroll, the new President of the Board of Trade was to visit Darlington last Friday to open the £500,000 extensions to the welding and pressure vessel works of Whessoe, Limited. The extensions will double Whessoe's capacity for this t pe of work and it will increase British capacity by about 10 per cent.

The new shop, which has the largest permanent stress-relieving furnace in Europe, is already in production on contracts which include one worth £900,000 for a crude oil conditioning plant for India. The firm is also associated with the construction of most of the reactors in British nuclear power stations.

The extensions complete the company's post-war expansion programme which has cost £4,000,000.

STEELWORKS CRANE CONTROL ORDERS

THREE orders for crane controls and lifting magnets for steelworks have been placed with Brookhirst Igranic, Limited, a company in the Metal Industries, Limited, group. Sir William Arrol & Company, Limited, has ordered 14 sets of a.c. Opotor crane controls for the new Tinsley Park steelworks of the English Steel Corporation, Limited, Sheffield.

Two d.c. crane equipments and 10 rectangular lifting magnets have been ordered by Babcock & Wilcox, Limited, for the 20-ton rigid mast type overhead travelling cranes of the South Durham Steel & Iron Company, Limited. The third order covers 13 heavy-duty electro-magnets for the new Spencer steelworks at Llanwern (Mon), and has been placed by Richard Thomas & Baldwins, Limited. The value of the orders is not being disclosed.

AN INTENSIVE export drive in eight Scandinavian and European countries is being launched by the Dudley (Worcs), firm of Joseph Gillott & Sons, Limited, as a result of a three weeks' fact-finding tour by the company's sales manager, Mr. David Beards. Agents are being appointed in Norway, Sweden, Denmark, Italy, Switzerland, Portugal, Greece, and France, and more are to follow.

The Scrap Markets

EXPORT FREEDOM

Little Effect on Market Situation

RELAXATION of the prohibition on exports of ferrous scrap has had little effect on the market generally and merchant processors widely share the view that licences to export low grade material have been granted too late and on a much too restricted scale. Few, in fact, contemplate shipping material oversea, and where it is possible they prefer to stock material ready for the time when the domestic consumers will again be in a position to increase consumption.

It is unlikely that a large tonnage of scrap iron and steel will be shipped abroad during the current licencing period, which extends to the end of February next year. Only the larger merchants can finance export trade, which means that fewer than 20 UK firms are in a position to ship the present surplus tonnage oversea. With outlets on the Continent limited it is not going to be easy to find markets, and even some of the large scrap merchants believe that it will be to their advantage to stockpile material rather than to ship abroad at unremunerative prices.

It is true to say that many inquiries have been received from foreign buyers but these have mostly been concerned with the better grades not covered by the export licence. Inquiries for turnings have been received from Italy and Sweden and it is expected that a few firm orders will result. Prices being quoted, however, are very keen, and for only limited quantities.

Limited Scrap Intake

Many smaller merchants are now finding that it pays to sort out material suitable for selling as reconditioned steel. This is a function of the merchant processor which is usually neglected when the demand for scrap is running at high levels.

On the home market intake of steelmaking scrap is limited and merchants' stocks overall show a considerable increase. A good tonnage of machinery and heavy cast iron scrap is, however, being absorbed by a wide range of foundries in the Midlands. Lighter grades, however, are still difficult to place.

The latest UK steel returns have given rise to a slightly more optimistic mood among some members of the scrap industry, who feel that the figures may indicate a levelling-off in production, rather than a continuance of the steadily falling trend which has been in evidence during the past six months.

According to the latest statistics available, consumption of scrap in steelmaking is once again exceeding the 200,000 tons a week average and this is expected to increase still further. Stocks held by steelworks and steel foundries continue to rise, however, and at the end of September stood at 1,256,000 tons, compared with 1,240,000 tons at the end of the previous month.

FOR A BREACH of the mines safety regulations at Wyndham Colliery, Ogmore Vale (Glam), Leonard James Barnard (28), was fined £1 at Bridgend.

Sir Peter Roberts Urges Common Market Caution

URGING that the Government should approach the question of entering the Common Market with the utmost caution, Sir Peter Roberts, chairman of Wellman Smith Owen Engineering Corporation, Limited, Newton, Chambers & Company, Limited, and Hadfields, Limited, said in Sheffield on Monday that to imagine we could join the Common Market and then begin to mould its policies to suit ourselves was quite unrealistic.

SIR PETER ROBERTS

"I suggest that if we go into an organization of this kind without the will to carry out the sort of policies these people want, it will only lead to stagnation, frustration and eventual defeat," he warned. The steel industry in Sheffield was very largely dependent on scrap for its high production, Sir Peter continued, but scrap prices in this country were lower than on the Continent and it seemed automatic that they should rise. This would put up steel prices.

Sir Peter went on: "What we require for prosperity is cheap raw materials, and these raw materials lie outside in the world, not in Europe. If we are going to put our capital commitments anywhere, it is better to put them into the development of raw materials round the world, so that we have raw materials which eventually Europe will have to buy."

AS A RESULT of the major extension to the Corby (Northants) steelworks of Stewarts and Lloyds, Limited, planned over three years, many more homes, services, and shops and a much larger town centre will be needed, says Corby New Town Development Corporation in its annual report. It says changes are required far beyond the corporation's existing resources or authority to act.

Orders Placed

Atlas Steels Awarded Indian Contract

A CONTRACT valued at several million dollars to supply know-how and training services to Hindustan Steel, Limited, in connection with a special-steels plant to be set up at Durgapur, India, has been awarded to Atlas Steels, Limited, of Canada.

The plant, which is being engineered by an Indian firm of consultants, is intended to be in operation by 1965. It will produce alloy, stainless, and tool steels. Initial output will be about 80,000 tons per annum, with provision for an ultimate capacity of 300,000 tons.

WORTH OVER £300,000, an order from South America for 9,000 tons of ingot steel has been secured by Stewarts and Lloyds, Limited, Glasgow.

OF ADVANCED design, a British milling cutter has brought an order direct from Russia to the manufacturers, Edibrac, Limited, Broadheath (Ches). The tool is the Centralok milling cutter with a "throw away" tip.

A SCOTT VICKERS rotary newspaper press has been ordered from Vickers-Armstrongs (Engineers), Limited, by the Statesman for delivery to its Calcutta office. It will be built and tested at the Elswick (Newcastle upon Tyne) works of Vickers-Armstrongs before being shipped to India.

FURTHER ORDER for 10 slide ladles for Sweden has been received by the Ardeer Foundry Company, Limited, Stevenston (Ayrshire). The ladles, which weigh about 12 tons each, are to be delivered by the end of January. The firm recently completed delivery of six similar ladles to Sweden.

LATEST OVERSEA order placed with British Insulated Callender's Cables, Limited, London, W.C.1, and valued at £330,000, is from the Central Electricity Board of the Federation of Malaya and is for the supply and installation of 60 miles of cables—power, control, and telephone—for the Cameron Highlands scheme.

UNDER A CONTRACT secured by Colvilles, Limited, steelmakers, of Glasgow, the firm will roll 60,000 tons of Russian steel in its new cold reduction strip mill at Gartcosh. The steel will be shipped to this country in coil form, will be cold reduced, and sent back as sheet metal. The first 5,000 tons are due to be redelivered to Russia in January.

PLANT FOR coke handling and screening at the East Moors, Cardiff, works of Guest Keen Iron & Steel Works (G.K.N. Steel Company, Limited), is to be built by W. J. Jenkins & Company, Limited, Retford. The order is worth over £170,000. The plant will have a handling capacity of 140 tons of coke an hour and is expected to be in operation by the end of 1962.

VALUED AT £400,000 an order has been received by Associated Electrical Industries, Limited, from G. & J. Weir, Limited, for eight 9,500 h.p. 11,000v motors to drive standby boiler feed pumps at Ferrybridge "C" power station. The order will be carried out by AEI's heavy plant division, which is also to construct a water-wheel generator, valued at £300,000, ordered by the Norwegian State power authority.

CONTRACT WORTH £35,000 has been secured by Thomas Summerson & Sons, Limited, Darlington, from the Parkgate Iron & Steel Company, Limited, for the laying out of sidings at a new steel plant at Rotherham. The order calls for 14,000 yds. of railway track and 65 turnouts on the Aldwark site of the new plant, and 3,000 yds. of track and 25 turnouts on a site at Roundwood. The order is Summerson's largest.

Area Management Changes in North-Eastern NCB

GENERAL MANAGER of the No. 5 (South Barnsley) Area of the North-Eastern Divisional Coal Board since 1947, Mr. J. E. Longden has been appointed general manager of the No. 2 (Doncaster) Area of the division from January 1 next. He will succeed Mr. Norman Hulley, who has been appointed to divisional headquarters.

MR. N. HULLEY

Mr. Longden, who will be succeeded as general manager of No. 5 Area by Mr. Edward Hoyle, present production manager of the No. 2 (Doncaster) Area, began work as a miner in the Derbyshire coalfield but went to Yorkshire in the early 1920s and attended Sheffield University where he received a diploma in mining engineering. After managing various collieries belonging to Newton, Chambers & Company, Limited, he became agent for that company's collieries. In 1939 he was appointed agent of the Barrow Barnsley Colliery Company, Limited, and later became general manager. He was appointed general manager of the No. 5 (South Barnsley) Area on nationalization, and under his leadership the Area has achieved a high degree of concentration of working with intensive coal-face mechanization, including outstanding results at Barrow Colliery.

Mr. Hulley received his mining engineering training at Sheffield University and became manager of Maltby Colliery in 1928. Thereafter he was manager, agent, and general manager of various collieries in South Yorkshire. On nationalization he became deputy area general manager of No. 1 (Worksop) Area of the North-Eastern Division and was subsequently production manager and general manager of that Area. He transferred to the No. 2 (Doncaster) Area as general manager in 1955. Mr. Hulley is a past president of the Yorkshire branch of the National Association of Colliery Managers, and of the Midland Institute of Mining Engineers.

Mr. Hoyle joined the mining industry in 1926 as a trainee with the Silkstone Collieries Company, Limited, and up until 1947 held successive posts as undermanager of Barrow Colliery, and manager at Monk Bretton, Barnsley Main, and Barrow collieries. On nationalization he became agent of the Barrow, Barnsley Main, and Monk Bretton collieries and later held appointments as deputy Area general manager and deputy Area production manager of the No. 5 (South Barnsley) Area. In 1955 he became production manager of that Area and in 1958 transferred to No. 2 (Doncaster) Area as production manager. He is a member of the Institution of Mining Engineers and of the NACM.

BRADFORD DYERS' ASSOCIATION, LIMITED, has placed an order with W. H. Allen Sons & Company, Limited, Bedford, for turbo-generating equipment for duty in the works of one of its subsidiaries in the dyeing industryfi, the Standish Company, Limited, Wigan.

IRON AND STEEL TRADE

LOWER levels of iron and steel production are expected to persist for some time yet and are reflected in the severe reduction in deliveries of raw materials. Last month's imports of iron and manganese ore were 1,169,000 tons, about 500,000 tons less than for the same month last year. Although deliveries of structural steel and plate to the engineering industries continue at a reduced rate, consumption is still high and order-books are well filled. Stock reductions remain one of the main causes of the reduced orders reaching the finishing mills where short time is still fairly widespread.

Pig-iron

No shortages of any type of foundry pig-iron are reported and most furnaces have good stocks. Consumers know that there is plenty of iron in stock and are therefore not booking ahead so that transactions are on a hand-to-mouth basis.

In common with other sections of the industry those supplying the various grades of pig-iron expect an improvement with the ending of stock withdrawals but it is not expected to be soon or sudden.

Ferro-alloys

The price of ferro-tungsten has been reduced by a further 5d. per lb. to 9s. 1d. per lb. W contained. Tungsten metal powder is similarly reduced to 12s. 1d. per lb. The demand for ferro-tungsten has quietened, but ferro-molybdenum is active and ferro-vanadium is in fair request. Support for the major grades of ferro-silicon is reasonably maintained, and steady attention is given to ferro-chrome.

Ferro-manganese and silico-manganese are of moderate interest, and there is a steady call on ferro-titanium and ferro-niobium. There is little improvement in the demand for silicon metal, but chromium metal receives steady support.

Semi-finished Steel

It is still not possible to report any improvement in this section of the industry. The re-rollers are, in most cases, short of business for small bars, light sections, and strip and are therefore keeping stocks of billets down to a minimum.

Even the steelworks' trade in carbon and alloy steels is much easier than it has been for a very long time and there is an easing in the call for reinforcing bars. Most of the steelworks have stocks of defectives and crops but are finding it difficult to dispose of them in view of the depressed state of the re-rolling trade.

Finished Steel

Steelmakers continue to find it difficult to plan forward programmes and almost all sections of the trade are depressed. The call for galvanized flat and corrugated sheets, good commercial quality bright drawn bars, special alloy and high carbon steels for the engineering trades is maintained, but a much higher level of output is needed to restore economic production.

Competition is very keen between the structural engineers and business for colliery requirements, such as roofing bars, arches, pitprops, etc., is very sluggish.

TELCON PLASTICS, LIMITED, Farnborough (Kent), is reopening on December 1 the branch in Cardiff at 16/17, Hills Terrace, previously operated by the Telegraph Construction & Maintenance Company, Limited. Mr. G. Morecroft will be in charge as area representative.

MI Marketing Co-ordination

WITH a view to co-ordinating the marketing arrangements of a number of companies in the group, Metal Industries, Limited, is establishing 14 regional offices in the UK. They will each house the area sales engineers of Brookhirst Igranic, Limited, Lancashire Dynamo & Crypto, Limited, Lancashire Dynamo Electronic Products, Limited, Lancashire Dynamo Nevelin, Limited, Foster Transformers Limited, and, in some offices, J. G. Statter, Limited.

Regional managers are as follow:—Midlands, Mr. W. H. Soper; Mid-southern, Mr. W. Jones; South-western, Mr. W. J. Weston; South Wales, Mr. F. R. Williams; Scotland, Mr. W. J. A. Gemmell; Eastern, Mr. B. L. Perkins; N.E. Yorkshire, Mr. H. R. Renfree; Central London, Mr. E. G. Harrison; S.E. London, Mr. R. W. Puttock; N.W. London, Mr. B. G. Scott; North-western and North Wales, Mr. A. S. Brain; Northern, Mr. F. D. Gough; N.E. Midlands, Mr. F. W. Whiting; S.W. Yorkshire, Mr. S. T. Wood.

Mr. J. R. Morgan and Mr. W. A. Worton become steel industry specialists for the north and south, respectively, and Mr. F. Nye and Mr. K. B. Allan, marine specialists for the south and north, respectively. Newly appointed group consultants are Mr. H. J. Drummond (Manchester), Mr. F. B. Rose (Newcastle), and Mr. W. M. Hendry (Ipswich, Nottingham, and N.W. London).

Towards Fewer Accidents in Foundries

GENERAL secretary of the Iron, Steel, Metal Dressers, and Kindred Trades Society, Mr. E. Tulloch, announced in Manchester last week that a move is to be made to organize safety compaigns in the iron, steel, and metal founding industry on a national basis.

The society has asked the Founding Committee of the Confederation of Shipbuilding and Engineering Unions to consider the establishment of three national safety committees to deal with the problem of the comparatively high accident rate in the industry.

CANADIAN operations of the Harland Engineering Company, Limited, Alloa, Scotland, previously in the hands of Bepco Canada, Limited, have been taken over by the Harland Engineering Company of Canada, Limited. Mr. J. A. Cumming has been appointed general manager and director. The development is aimed at the more active sales promotion of Harland hydraulic and electrical products, and at strengthening the specialist engineering service available to Canadian customers.

Coalfield News

From Scrap to Museum

RESCUED from the scrap pile at Denby Hall Colliery (Derbyshire), a boiler, about 170 years old, that for many years provided steam for an old colliery beam engine has been sent to the Science Museum in South Kensington. The boiler, which is 7 ft. in diameter and in a fair condition having regard to its age, was identified by Mr. E. Potter, a member of the Newcomen Society.

The Science Museum already has an old beam engine taken from Pentrich Colliery, not far from Denby Hall.

MINER AT Silverwood Colliery, Rotherham (Yorks), for the past 10 years, Mr. Terence Parkin (25) is leaving the pit next year to enter the Church of England.

A SPECIAL MEETING of the Yorkshire Area executive of the National Union of Mineworkers is to be called to consider the position and wages of craftsmen in the county.

MR. DAVID FOSTER, who has celebrated his diamond wedding, was employed until two years ago at the Mary Pit, Lochore. He retired after 69½ years' service in the industry

ESTABLISHMENT OF a new township close to Bedwas Colliery may result following a decision of the Bedwas and Machin UDC to approve initial stages of a plan to build 300 houses for the National Coal Board.

THE ADMINISTRATIVE DEPARTMENT that handles pensions for about 5,000 Nottinghamshire miners every month is to move to a new two-storey building next to the Nottinghamshire NUM headquarters at Berry Hill.

LAST WEEK'S SHIPMENTS of coal and coke from the South Wales ports was the highest for more than three years. The total of 85,500 tons had not been beaten since the week ended July 20, 1958.

COAL SHIPMENTS through the port of Garston, Liverpool, totalled 67,072 tons in October. Coke shipments amounted to 610 tons. Principal coal shipment was to Northern Ireland (58,596 tons).

A CARGO OF 11,500 TONS of coke has been loaded at Cardiff for Japan. It is the last shipment under the contract signed by Japanese buyers earlier this year and brings South Wales shipments to that country to about 50,000 tons.

A FATAL ACCIDENT at Rawdon Colliery, near Ashby-de-la-Zouche (Leics) marred the first Saturday shift to be worked at the pit under the new scheme. Mr. Andrew Edwards (22) was killed at the coal face half an hour before the shift ended.

FOLLOWING 19 YEARS' service underground at Ashington Colliery (Co. Durham), Lucky, a pit pony, is to be retired and will spend its retirement at a Malton (Yorks), racing stable, due to the interest shown by Mr. John George Newton, a Sunderland commission agent.

BALLOT, WHICH BEGAN on Monday throughout collieries in Yorkshire, is for a president of the Yorkshire Winding Enginemen's Association to succeed Mr. Frank Cope. The result of the postal ballot will be made known at the association's annual meeting in January.

MINERS AT FIVE of the six collieries in North Wales have voted against voluntary Saturday shift work. One of the smallest of the six pits—Point of Ayr Colliery—voted in favour. The Midlands Area Council of the NUM has decided to raise no opposition to branches wishing to work the shift. Five North Staffordshire pits have decided to co-operate and more are likely to agree.

Lord Robens Explains Scots Pits Closures

ALARM felt by miners and other workers at the decision to close 17 Scottish pits next year was expressed by Mr. George Middleton, secretary of the Scottish TUC, at a meeting of the National Production Advisory Council for Industry in London last Friday. The closures, he maintained, constituted "a social tragedy" and would turn a number of mining areas into "ghost towns." An inquiry was called for as to the future of mining in Scotland.

Replying, Lord Robens, chairman of the National Coal Board, agreed that the social consequences of such closures were always great. He reminded the meeting that nine of the 17 pits were exhausted and would have been closed in any case. The board's decision did not imply a restriction of coal output but was aimed towards greater efficiency; 75 per cent. of the men affected were expected to be absorbed into the industry elsewhere and the remainder would probably find other work.

Glenochil Colliery was an unfortunate case—it had not turned out to be as productive or efficient as the engineers expected from a brand new venture. They had found they could not get at the coal and the pit had lost £1,300,000 in five years.

The General Council of the Scottish TUC, in a statement the previous day, said it was likely that a conference of public bodies and MPs on the closures would be called. "Public opinion must be aroused against the present trend of Scottish industry and employment." The council said it was "alarmed" by what appeared to be a colossal waste of public money in the abandonment of the Glenochil mine and the decision to restrict production at Rothes colliery. Delegates of the Scottish Area of the National Union of Mineworkers on Monday reaffirmed its executive's decision to call for a public inquiry into the management, planning, and financial transactions of the Scottish Divisional Coal Board, and called for a conference of all unions concerned.

Hardypick Chairman to Retire

CHAIRMAN and managing director of Hardypick, Limited, manufacturers of mining tools, coal and rock drilling machinery, of Sheffield, Mr. Thomas Gordon Jameson is to retire at the end of the month. He is 84, and has been with Hardypick for more than 69 years, starting as an office boy in 1892. He was successively secretary and managing director before also becoming chairman in 1945, in which year he was made MBE.

Mr. Jameson was the ninth of a family of 11. He was the first person in Sheffield to be elected a Fellow of the Chartered Institute of Secretaries and is a Freeman of the Cutlers' Company.

CONTRACT for a 60,000,000 cu. ft./day continuous reforming plant has been awarded by the North Thames Gas Board to the Power-Gas Corporation, Limited, a member of the Davy-Ashmore, Limited, group. The plant is due to go into operation at Southall (Middx) in July, 1963. Power-Gas will be responsible for all civil engineering, plant design, construction, and commissioning, with the main process engineering work being carried out by its gas plant division at Stockton-on-Tees.

THE COAL TRADE

MOVEMENT of coal supplies from the pits is encouraging, and news that British Railways, with the co-operation of the National Coal Board, hopes to overcome difficulties which led to a shortage of wagons to some Yorkshire pits during the last two winters further brightens transport prospects for the months ahead. Retail trade jogs along, with quite a lively business in small orders. Industrial commitments are well met, although supplies of some qualities—Yorkshire washed smalls, for instance—are fully sold.

WEST MIDLANDS

Demand for house coal is running at a level rather higher than was expected at the beginning of the winter season, partly because of the weather and also because of increased demand from commercial premises and social institutions. Collieries are under strong pressure for all qualities in the medium price ranges; where there is any spare coal it is usually the higher priced coals, but there is no great surplus of these qualities available. Because of the bigger stocks at the centres of consumption—and this is particularly true of merchants' yard stocks—consumer demand up to the turn of the year is fairly well covered.

There is, however, some anxiety about the supply position in the first months of the new year; the second half of the winter period could be difficult in normal conditions, but would become acute in severe weather. Supplies of the well-known manufactured open-fire fuels are much below the level of consumer demand, particularly Coalite. Supplies of all kinds of anthracite are scarce and how to meet the increasing demand for stove nuts is a problem which all merchants find difficult to solve. Last winter, supplies of Phurnacite were generally available, but there are now only limited tonnages available of this fuel. Supplies of small anthracite are equally scarce and consumers' orders are subject to heavy delays. Merchants are now receiving more orders for gas coke; a better turnover in Glloco is being experienced, while space heating requirements in commercial premises and institutions have improved demand.

The demand for industrial coals has increased and contractors are now asking for maximum supplies against contracts since the factory space-heating programme got under way. Power-station requirements continue to expand and overall demand is well up to the level of colliery outputs. Boiler slack is not usually difficult, but doubles and singles are by no means easy. A slightly more optimistic view is now held on the market in respect of hard coke. There has been a better demand for blast-furnace coke, though supplies are not difficult. Industrial coke is inclined to be weak, while there is an improvement in the demand for hard coke nuts. The demand for foundry coke, especially the well-known brands from South Wales, has increased locally.

NUM PRESENTS WAGE CLAIM

THE National Union of Mineworkers' claims for an increase of £1 a week for daywagemen and weekly paid industrial staff and for the adult rate to be paid at the age of 18 instead of 21, and also for reduction of hours, were presented at a meeting in London on Wednesday of the industry's joint national negotiating committee.

The National Coal Board's representatives are to report back to the board, and a further meeting to give an answer will be arranged when the claims have been considered.

Coal Output and Consumption

SMALL margin of output of saleable coal over consumption—78,600 tons—gives little chance of building up stocks, especially in the grades and at the points required. Output, however, continues to rise and last week reached 4,045,800 tons, compared with 4,019,600 tons the previous week and 3,929,900 tons a year ago. The gap between total output so far this year and the corresponding 1960 total has now been reduced to just over 3,500,000 tons. The average rate of production for the first 45 weeks of the year gives a total output of about 186,000,000 tons for the whole of 1961, but the final result could top the 190,000,000-ton mark.

There were 561,740 wage-earners on colliery books on November 4, against 585,560 on November 5, 1960, the numbers engaged at the coal face being 209,870 and 221,300 respectively. Total absenteeism (all workers) in the week ended November 4 was 14.90 per cent. compared with 14.65 per cent. in the week ended November 5, 1960. Output at the face was 4.338 tons and overall 1.510 tons in the week ended November 4, compared with 4.040 and 1.423 tons in the week ended November 5, 1960.

The following table gives (in tons) the provisional figures of output of saleable mined coal by division in the week ended November 11, and the tonnage lost through disputes:—

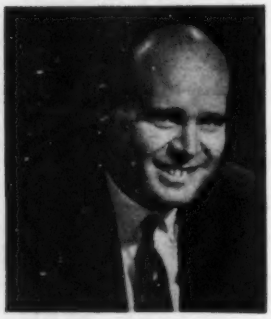
Division.	Week ended November 11, 1961.		Week ended November 12, 1960.
	Total output.	Tonnage lost.	Total output.
Scottish ..	361,000	5,000	350,000
Northern (N&C) ..	244,000	1,000	243,000
Durham ..	466,000	—	468,000
North-Eastern ..	845,000	14,000	824,000
North-Western ..	242,000	7,000	241,000
East Midlands ..	968,000	—	912,000
West Midlands ..	292,000	—	278,000
South-Western ..	377,000	4,000	388,000
South-Eastern ..	32,000	—	31,000
Great Britain—			
Deep-mined coal ..	3,827,000	31,000	3,735,000
Open-cast coal ..	175,000	—	157,000
Other deep-mined (including licensed mines) ..	44,000	—	38,000
TOTAL	4,046,000	31,000	3,930,000

LAST TWO coal-burning ships in the North Shields fishing fleet have been disposed of for scrap to the Gateshead shipbreaking yards of C. W. Dorkin & Company, Limited, and J. J. King & Company, respectively.

Board Changes

To Direct Firth Cleveland Steel Strip Production

FOR the past two years a director of Firth Cleveland Steel Strip, Limited, Tipton (Staffs), Mr. Kenneth A. Smith has been appointed a director of FIRTH CLEVELAND STEEL, LIMITED, and of the associated company, J. J. HABERSHON & SONS, LIMITED. He will have full executive responsibility over the whole field of steel strip production and will be based at Holmes Mills, Rotherham.



MR. K. A. SMITH

Firth Cleveland Steel, Limited, was set up in August, 1960, to look after the marketing interests of J. J. Habershon & Sons, Tenuous Steel Company, Limited, Firth Cleveland Steel Strip Company, Limited, and Edmonton Steel Strip Company, Limited. All five companies are members of the Firth Cleveland, Limited, group. Mr. Smith joined the Tipton company in 1949 as a metallurgist. In 1955 he was made works manager, and in 1959 he became production director. He is a member of the Iron and Steel Institute and of the Institute of Metallurgists.

PLESSEY INTERNATIONAL, LIMITED—Mr. G. H. Doust has been appointed a director.

WM. JAS. GLOVER & COMPANY, LIMITED—Mr. Jos. Johnson has been appointed works director.

THAMES WIRE & CABLE COMPANY, LIMITED—Mr. Howard P. West, sales manager, has been appointed to the board.

OSBORN-MUSHET TOOLS, LIMITED—Mr. B. Smith has been appointed a director of the company, an associate company of Samuel Osborn & Company, Limited.

ROBERT KELLIE & SON, LIMITED—Mr. F. V. Smith has been appointed a director and general manager. The company is a subsidiary of the Vokes Group, Limited.

WOLSELEY ENGINEERING, LIMITED—Mr. G. R. Hands and Mr. F. Dean Swift have been appointed to the board as marketing director and sales director respectively.

NEWALLS INSULATION COMPANY, LIMITED—Mr. R. H. Wilson has been appointed a director of the company, a member of the Turner & Newall, Limited, group, as from January 1.

FIRTH-VICKERS STAINLESS STEELS, LIMITED—Mr. W. E. A. Redfearn, director of the English Steel Corporation, Limited, and managing director of English Steel Forge & Engineering Corporation, Limited, has joined the board.

WILLIAM BLYTHE & COMPANY, LIMITED—On becoming managing director, Mr. C. E. M. Cheetham has relinquished the appointment of secretary and has been succeeded by Mr. J. Meakin. Mr. Miles L. Haselden has been elected to the board.

MIDLAND INDUSTRIES, LIMITED—Mr. J. H. Bean is shortly to relinquish the chairmanship of the company, but will remain on the board. He will be succeeded as chairman by Maj. M. J. Webb. Mr. P. W. McKenzie is to become managing director.

SMALL & PARKES, LIMITED—Mr. E. J. Parsons and Mr. P. Worledge have been elected to the board of the company, a subsidiary of Cape Asbestos Company, Limited. Mr. J. Valentine has been elected to the board of Andersons Insulation Company, Limited, another subsidiary, of which he will continue as secretary.

JOHN MOWLEM & COMPANY, LIMITED—Following a lifetime association with the company, Sir George M. Burt, who has been a member of the board for 48 years, has retired as chairman. At the request of the board he has agreed to become president of the company. Mr. E. C. Beck, managing director, has been appointed chairman.

ALFRED H. MOULD & SONS, LIMITED—Mr. A. L. Mould has succeeded as chairman and joint managing director, Mr. H. W. Mould, who has retired because of ill-health after more than 50 years with the company. Mr. A. E. Davies becomes joint managing director and Mr. M. C. Mould has been appointed a director and general manager. Mrs. E. M. Green, previously assistant secretary, is now secretary.

GEO. ANGUS & COMPANY, LIMITED—Mr. D. E. F. Canney has been appointed an additional managing director and will assume control of the group's manufacturing and trading interests in fire fighting and safety equipment. Mr. A. Procter will continue as managing director, engineering divisions. Mr. D. D. Angus will continue as managing director, general division, and will assume control of the group's manufacturing and trading interests in belting and rubber hose.

GEC Winder for Australia

INSTRUCTIONS have been received by G.E.C. Engineering, Limited, from the British General Electric Company Pty., Limited, of Australia, to manufacture a double-drum, single-clutch, geared d.c. winder, for Oakdale State Coal Mine. The approximate value of the contract is £A180,000 and installation is scheduled to take place during the annual holiday period of Christmas, 1962.

The winder will be used to raise 500 tons of coal an hour from a vertical mine shaft 1,350 ft. deep by means of balanced skips, each with a capacity of eight tons of coal. Each drum will be 15 ft. 6 in. in diameter and 5 ft. 9 in. wide, and will be of fabricated steel construction. The winder will be equipped with the GEC positive oil-pressure operated braking system, originally designed to meet British mining regulations. This will be the first of its type to be supplied oversea.

A large proportion of the mechanical parts will be manufactured in Australia to GEC design and the remainder will be made at the company's Erith Works. All the electrical equipment for the winder is to be supplied by the Witton Works of GEC (Engineering).

PLANS FOR THE development of an iron and steel industry worth £100,000,000 are still in a "very exploratory state" said Sir Edgar Whitehead, the Southern Rhodesian Prime Minister. He had been careful to stress this when he made his original announcement, Sir Edgar said, indicating that several bodies were interested in the development. News that a Japanese company planned to export up to 5,000,000 tons of unprocessed ore from the Hunter Road area did not conflict with the Government's policy of having the country's raw material processed locally.

Company News

GKN Profits Warning

Drastic Fall Forecast for 1961

DOWN-TURN in trading conditions in the UK and the pressure on profit margins have continued with increasingly severe effect on the results of the Guest, Keen & Nettlefolds, Limited, group. The profits of the steel companies are particularly affected, the directors state. Pre-tax profits may fall by some £7,000,000 to £8,000,000 from the record profit of £30,800,000 earned in 1960. The interim dividend is maintained at 5 per cent. on the ordinary capital increased by a one-for-six rights issue and the final dividend is likely to be held at 11 per cent.

The steel companies have not only been affected by reduced demand, in common with the rest of the industry, but to a greater extent by the decline in profit margins. "This decline is largely due to the fact that the Iron and Steel Board, which controls the industry's selling prices, has refused to take proper account of increases in coal and fuel oil prices, wages, and other items of cost."

Moreover, the largest oversea company, John Lysaght (Australia) Pty., Limited, after a satisfactory start to the year, has been seriously affected by the recession in many parts of the Australian economy, notably the motor vehicle and domestic appliance industries, the directors state.

TRIPLEX FOUNDRIES GROUP, LIMITED—An interim dividend of 5 per cent. has been declared

JOSEPH LUCAS (INDUSTRIES), LIMITED—Net profit for the year ended July 31, 1961, is £2,526,350 (£2,923,424) and the company is repeating the dividend of 2s. 9d. per £1 ordinary.

WILLIAM BAIRD & COMPANY, LIMITED—The offer for the purchase of the whole of the ordinary shares of the Northern Mercantile & Investment Corporation, Limited, has been accepted in full.

GAS PURIFICATION & CHEMICAL COMPANY, LIMITED—Following a net loss of £45,959 (£397,726 profit) for the year ended June 30, 1961, no dividend is recommended, against a total of 35 per cent. for 1959-60.

HALE & HALE (TIPTON), LIMITED—Group net profit for the year ended August 4, 1961, rose to £29,884 (£19,680), after tax of £18,845 (£10,959). A final dividend of 15 per cent. (same) maintains the total at 20 per cent.

METAL INDUSTRIES, LIMITED—Interim dividend in respect of the year to March 31, 1962, is being maintained at 6 per cent. The 1960-61 total was 15 per cent. The company reports increased profits for the half year to October 1, 1961.

FARROW & JACKSON & PURDY, LIMITED, engineering holding company, of London, E.1—Net profit for the year ended July 31, 1961, was nearly double at £31,382 (£16,310), after tax of £31,205 (£19,717). The dividend is raised by 2½ per cent. to 10 per cent.

PRESSED STEEL COMPANY, LIMITED—Partly due to unofficial strikes, the directors state that results for 1961 are likely to be "most disappointing" and the company is not paying an interim dividend. An interim of 9 per cent. was followed by a final of 21 per cent. for 1960.

R. & J. DICK, LIMITED, power transmission engineers, of Glasgow—Group profit for the year to August 31, 1961, fell to £52,472 (£136,122), before tax of £29,886 (£65,054), and the dividend of 10 per cent. compares with 17½ per cent. equivalent after adjusting for one-for-one scrip issue.

LEEDS FIRECLAY COMPANY, LIMITED—Group trading profit of £105,788 in the year ended June 30, 1961, compares with a previous loss of £24,582, and the net profit is £58,350 (£49,926 loss). Dividends are resumed with 6 per cent. on the preferred ordinary and 4 per cent. on the ordinary stock.

HEENAN GROUP, LIMITED, manufacturers of hydraulic presses, locomotives, and precision castings, etc.—With a final of 8 per cent. total dividend for the year to September 2, 1961, is being raised to 13 (11¼ equivalent) per cent. Net profit was £298,395 (£282,748) after tax of £663,742 (£564,387).

FRAM GROUP, LIMITED (formerly Warsop Power Tools, Limited), manufacturers of rock-drilling machinery, pumps, etc.—Net profit in the year ended June 30, 1961, recovered to £44,975 (£11,478 loss). No dividend is recommended for the period, but a 2½ per cent. interim has been declared for the current year.

METAL TRADERS, LIMITED, non-ferrous metal and ores merchants and brokers, of London, E.C.3—Group net profit for the year to March 31, 1961, fell to £96,299 (£108,561), after tax of £77,743 (£123,921), and payment for the year is being halved to 6d. per 2s. unit. The previous distribution included a bonus of 3d.

CHARLES ROBERTS & COMPANY, LIMITED, carriage and wagon builders, financiers, etc., of Horbury Junction, near Wakefield—Group net loss of £911,710 was incurred in the year ended March 31, 1961, compared with a previous deficit of £284,060. No dividend is recommended on the ordinary capital. The preference dividend has been paid.

OPPERMAN GEARS (HOLDINGS), LIMITED—It is proposed to issue to the Limitorque Corporation of Philadelphia 200,000 ordinary 1s. shares in the company at 3s. 3d. a share and to grant an option to subscribe for a further 400,000 shares at 4s. a share at any time on or before December 31, 1963. The two companies already have a trading association.

BIRMINGHAM SMALL ARMS COMPANY, LIMITED—Net profit for the year to July 31, 1961, is £1,372,745 (£1,663,748), after tax of £1,560,000 (£1,754,800). A final dividend of 7½ per cent., makes 11¼ per cent. for the year, which is the same equivalent dividend as previously when, however, holders received a special centenary payment equal to 3½ per cent., not subject to tax.

J. BROCKHOUSE & COMPANY, LIMITED, manufacturers of axles, dropforgings, iron and steel castings, etc., of West Bromwich (Staffs)—An unchanged 8½ per cent. final dividend for the year to September 30, 1961,

maintains the year's total at the higher 12½ (10) per cent. rate paid for the previous year. After tax of £641,225 (£544,094), the profit balance is £613,820 (£563,268).

JOHN BROWN & COMPANY, LIMITED—Offer made on behalf of the company to acquire all the 1,500,000 ordinary shares of 2s. each of Holmes Homalloy, Limited, for cash at 7s. 6d. a share has been accepted in respect of 1,441,190 shares, representing over 96 per cent. of the total. The offer has been declared unconditional and late acceptances will continue to be received.

CHARLES WINN & COMPANY, LIMITED, manufacturers of valves, screwing and tapping machines, etc., of Birmingham—Final dividend is raised to 7 (5) per cent., and, in addition, a special dividend of 2 per cent. is recommended, making a 12 (7½) per cent. total for the year ended July 31, 1961. Group net profit of £87,813 (£37,145) constitutes a record. Net profit is £42,415 (£25,789).

PICKFORD, HOLLAND & COMPANY, LIMITED—In his review of the year ended July 2, 1961, Mr. Ronald Steel, the chairman, said that current sales are running considerably below last year's, and the firm's brick-making plants are not fully occupied. Consequently, unless there is an immediate upturn in orders, the excellent financial results of the year ended July 2 may not be repeated.

GLOUCESTER RAILWAY CARRIAGE & WAGON COMPANY, LIMITED—On behalf of his own and family holdings of over 50,000 shares, Mr. S. E. Scammell is to circularize shareholders of the company setting out reasons why the bid by Winget, Limited, which he considers, "grossly inadequate," should be rejected. Mr. Scammell finds it "impossible to perceive how even liquidation could produce less than 20s. a share."

WALMSLEY (BURY) GROUP, LIMITED, machinery makers and engineers, of Bury (Lancs)—The order-book currently stands at a level higher in value than ever before, reports Mr. P. Holland, the chairman. Since January, orders for complete paper and board-making machines have been obtained for mills in eight countries, including an order from Russia worth over £3,500,000. Over 75 per cent. of orders on hand are for export to 28 countries.

SOUTH AFRICAN IRON & STEEL INDUSTRIAL CORPORATION, LIMITED (ISCOR)—Sales for 1961 were down at R.112,500,000 (R.116,000,000), including exports at R.8,800,000, but net earnings, after tax, were up at R.22,400,000 (R.22,200,000). Mr. F. Meyer, the chairman, states that three quarters of the R.560,000,000 expansion scheme will be spent locally. The first part of the extension at Vanderbijl Park should be in operation by 1966 and the second by 1969.

Staveley Industries Orders are "Satisfactory"

CHAIRMAN of Stavelev Industries, Limited, Mr. J. P. Hunt reports that the group has "satisfactory order-books." Referring to the fall in group profits for the year ended June 30, 1961, he says that this was largely attributable to items of an exceptional or non-recurring nature. Group profit was down to £1,385,404 (£1,675,843).

Main causes for the reduction, he explains, were the expected improvement in Canada did not materialize; machine tool subsidiaries' difficulties were prolonged; and research and development costs in relation to those subsidiaries interested in machine tools exceeded £220,000, or more than twice the previous year's figure.

BSA Group Forms Two New Divisions

WITH the intention of giving local managements more power and responsibility for their own affairs, the formation of two entirely new divisions — general engineering and metal components —was announced last week by the Birmingham Small Arms Company, Limited, group. Each division will have its own board and will comprise four companies.

MR. R. F. K. BELCHEM

They are added to the five divisions already created to handle business in motor-cycles, machine tools and steel. Mr. R. F. K. Belchem, who has been personal assistant to the BSA group chairman since 1959, has been appointed managing director of the metal components division, and Mr. A. J. Burton, formerly production director of the British Motor Corporation, Limited, and director of manufacturing services in BSA since last year, has been appointed managing director of the general engineering division.

BICC Trading Profits Rise 18 Per Cent.

TRADING profit of British Insulated Callender's Cables, Limited, in the first half of 1961 was £3,321,000, an improvement of 18 per cent. over the first six months of 1960, and of 17 per cent. over the second half of last year. Sir William McFadzean, chairman, states that on the basis of current figures, this improvement is expected to be at least maintained during the second half-year. The interim dividend is maintained at 4 per cent. on the increased £21,000,000 ordinary stock.

Group sales at £75,000,000 were £6,000,000 more than in the preceding half year and £1,000,000 ahead of the first six months of 1960. After taxation of £1,471,000, total net earnings of the group were £2,587,000, against about £2,300,000 in each half of 1960. The increase in total sales was due partly to higher exports and oversea turnover, but earnings of oversea manufacturing interests have fallen, the Canadian company incurring a loss.

Inco's Net Earnings Increase

HELPED by an increase in demand for and also in the company's price for nickel, which operated over much of the period, net earnings of the International Nickel Company of Canada, Limited, advanced in the September quarter to US $20,579,000, or 70 cents a common share, against $18,993,000 or 65 cents per share, in the second quarter, and $18,783,000, or 64 cents a share in the corresponding 1960 quarter.

Net sales for the quarter rose $10,000,000 to $124,000,000 bringing the nine months' total to $383,000,000 again.

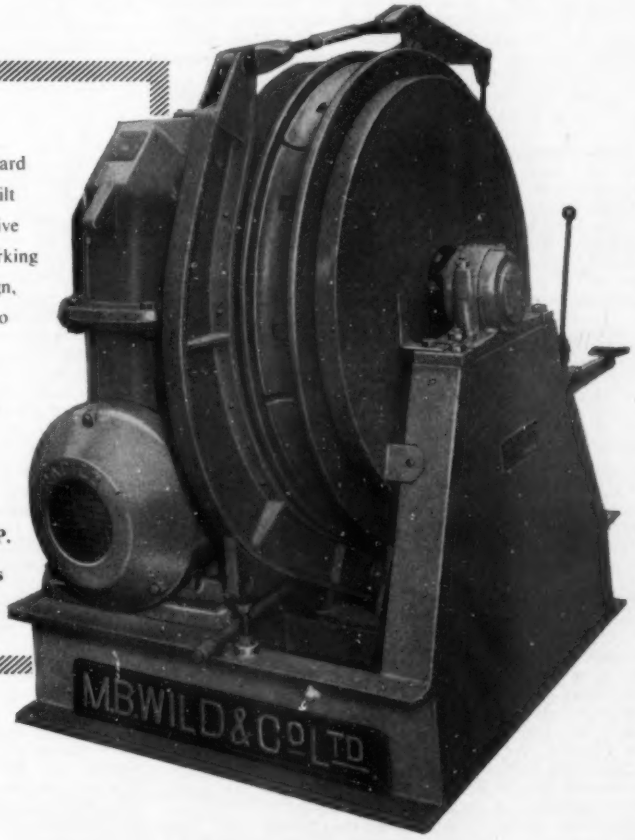
MB WILD

Endless Rope **HAULAGES**

STANDARD 20 H.P. AND 30 H.P. ELECTRIC OR COMPRESSED AIR MOTORS

This range of smaller, standard haulages is designed and built by engineers with an extensive first-hand knowledge of working conditions. Simple in design, extremely robust and easy to maintain, they meet the demand for a smaller type haulage which will operate for long periods with complete reliability.

Haulages of up to 1,000 H.P. are built to specification to meet the varying demands of individual circumstances.



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NEWS IN BRIEF

WORK HAS STARTED on extensions to the Newburn (Northumberland) branch of K. & L. Steelfounders & Engineers, Limited, Letchworth (Herts).

STOKE-ON-TRENT'S newly-formed Metallurgical Society meets for the first time on Monday at the North Staffordshire College of Technology.

A VERDICT of Accidental Death was recorded at the inquest on Robert John George (15), who was killed after he was buried under iron ore in a hopper at the Ebbw Vale (Mon) works of Richard Thomas & Baldwins, Limited.

NEW SALES OFFICE address of Baker Perkins Granbull, Limited, is 4-6, Edwin Road, Twickenham (Middx). The administration and accounts will continue to be run from the company's works at 39, High Street, Kingston-upon-Thames.

THROUGH THE REORGANIZATION of the Gresham Lion group of companies the telephone number of the group was changed; but not that for the small transformers division of Gresham Transformers, Limited, which remains Feltham 6661.

DURING October, imports of iron and manganese ore into the River Tees amounted to 175,496 tons, a fall of over 200,000 tons on the corresponding period of 1960. Similar imports at West Hartlepool at 38,576 tons were half those of a year ago.

MINISTER OF LABOUR, Mr. John Hare, told the Shipbuilding Employers' Federation in London on Wednesday that he would take early steps towards calling both sides of the industry together to work out a new joint approach to its problems.

PRESENTING GOLD watches to 86 eastern region employees who have 21 years' service with the firm, Mr. T. E. Potts, managing director of the British Oxygen Company, Limited, said this year's awards coincided with the company's 75th anniversary.

DURING THE WEEK to November 13 actual production of raw steel in the US was 2,046,000 tons, an increase of 0.1 per cent., compared with the 2,044,000 tons of the preceding week. Production so far this year of 82,811,000 tons is a 6.9 per cent. decrease on last year.

AS A STEEL TOWN, Middlesbrough should set an example and buy steel lamp posts rather than aluminium ones. Cllr. R. H. Huggins' contention at a council meeting resulted in the recommendation to purchase 700 aluminium lamp columns costing £11 10s. each being referred back.

SHEFFIELD engineering group, Thos. W. Ward, Limited, is to pay bonuses to over 1,600 hourly-paid workers in recognition of their contribution to the company's successful year. The bonuses cover workers who have been continuously employed by the company from January, 1961, and range from £6 to £12.

BECAUSE OF THE "depressed market for iron and steel," 200 workers at the Millom Hematite Ore & Iron Company, Limited, Cumberland, are to be dismissed at the end of next week. Mr. John Scott, managing director of the firm, said last Friday that the ironworks would have to close down one of its furnaces.

ACCIDENT FREQUENCY table of the British Iron and Steel Federation for the second quarter of 1961 is headed by Richard Thomas & Baldwins, Limited. Midland Section (.27) and Panteg Section (.37) are the first and second, respectively, Redbourne Section (.85) is fourth, Partridge, Jones & John Paton, Limited (1.11), is 11th.

ABOUT 3,000 workers engaged in building the £50,000,000 steel strip mill of Colvilles, Limited, at Ravenscraig, Motherwell, staged a token strike on Wednesday in protest against conditions on the site. Ten different unions were involved, and the men complained they were finding it difficult to get a quick decision on grievances.

MINERAL TREATMENT plant on a two-acre site in Derbyshire, about 12 miles from Sheffield, is to be built by Laporte Industries, Limited. Production is expected to start next June, and the plant will have an initial annual capacity of 20,000 tons of acid grade fluorspar, between 6,000 and 8,000 tons of barytes, and 1,000 tons of lead.

APPRENTICE PLATE-WELDER in the excavator welding shop at the Thorncliffe works of Newton, Chambers & Company, Limited, ironfounders and engineers, etc., of Sheffield, 19-years-old Gary Drabble has been awarded a gold watch by the British Constructional Steelworks Association in recognition of the high pass marks he obtained in the City and Guilds intermediate examination in fabrication of steelwork.

A NUMBER of Sheffield firms had export consignments on the Clan Keith which blew up and sank with loss of life off the coast of Tunisia recently. They included four consignments of wire worth about £1,000 from the Tinsley Wire Industries, Limited, 5 tons of steel from C. R. Denton Steel & Tool Company, Limited, and the "legs" of a sectional water tower which were being sent to Ceylon by Thos. W. Ward, Limited.

CONTINUOUS FURNACE LINE for the forming, hardening, and tempering of heavy locomotive leaf springs has been installed at British Railways' works at Crewe, by the Incandescent Heat Company, Limited, and its associated company, Controlled Heat & Air, Limited. The plates are conveyed through the hardening furnace on cast nickel-chromium chains. The furnace is under and over fired by fan-blast gas burners to ensure rapid and uniform heating.

AWARDS TO APPRENTICES at the 43rd annual prize-giving of the Stanton Ironworks Company, Limited, were presented by Capt. L. S. Saunders, the retiring director of training of the parent company, Stewarts and Lloyds, Limited, on Saturday. Increase in the number of students to 389 was reported by Mr. W. S. Mathews, Stanton training officer, who said the value of awards was now £2,972; 61 City and Guilds certificates were obtained.

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WITH the aim of ensuring more collaboration at all levels of production—in the estimating, commercial and technical departments—Swan, Hunter, & Wigham Richardson, Limited, shipbuilders and repairers, engineers, etc., of Wallsend (Northumberland), has placed all its engine works on the Tyne under unified control.

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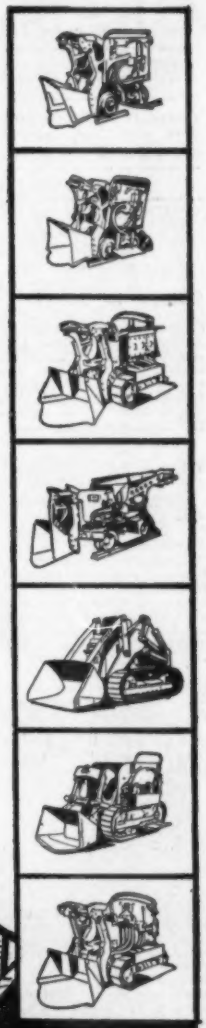

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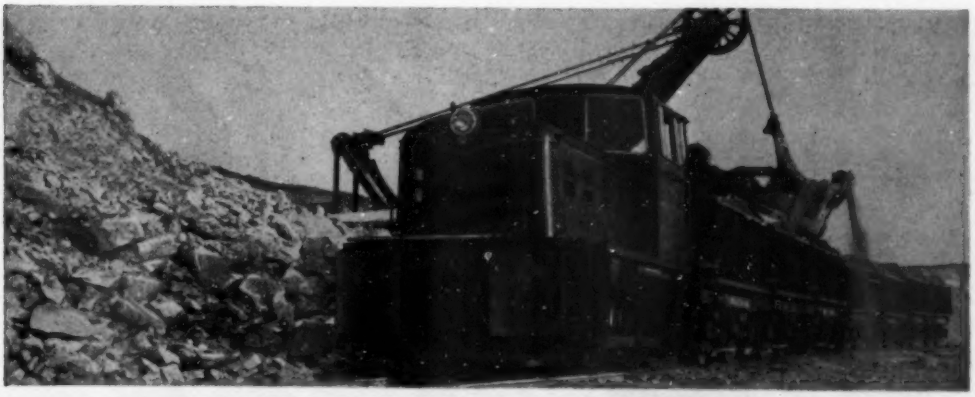

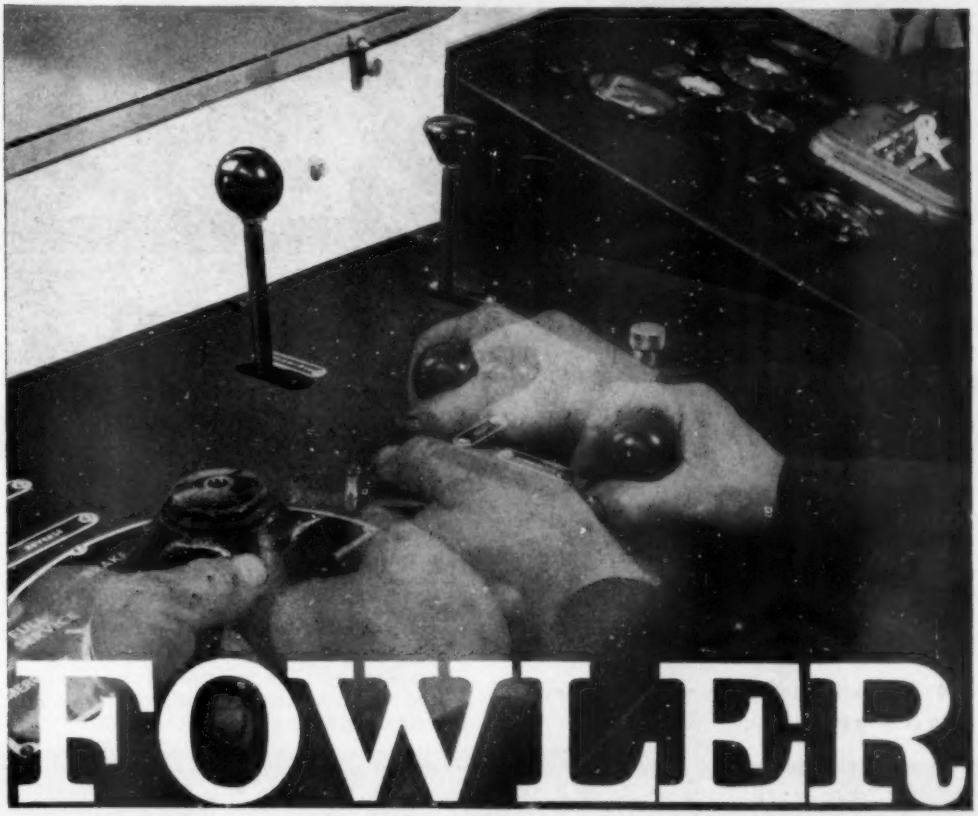

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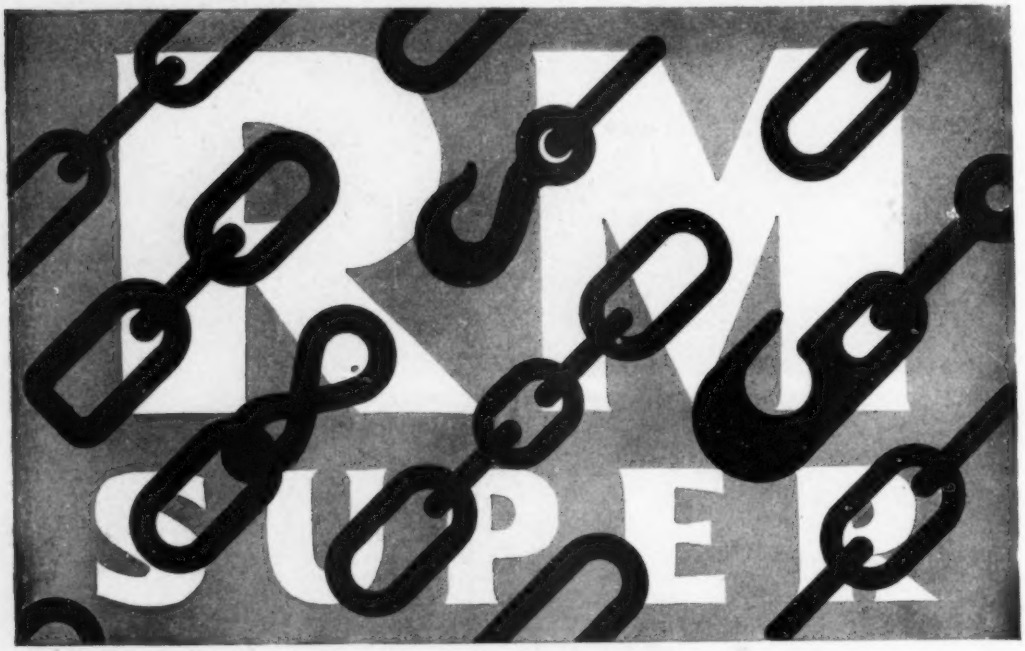

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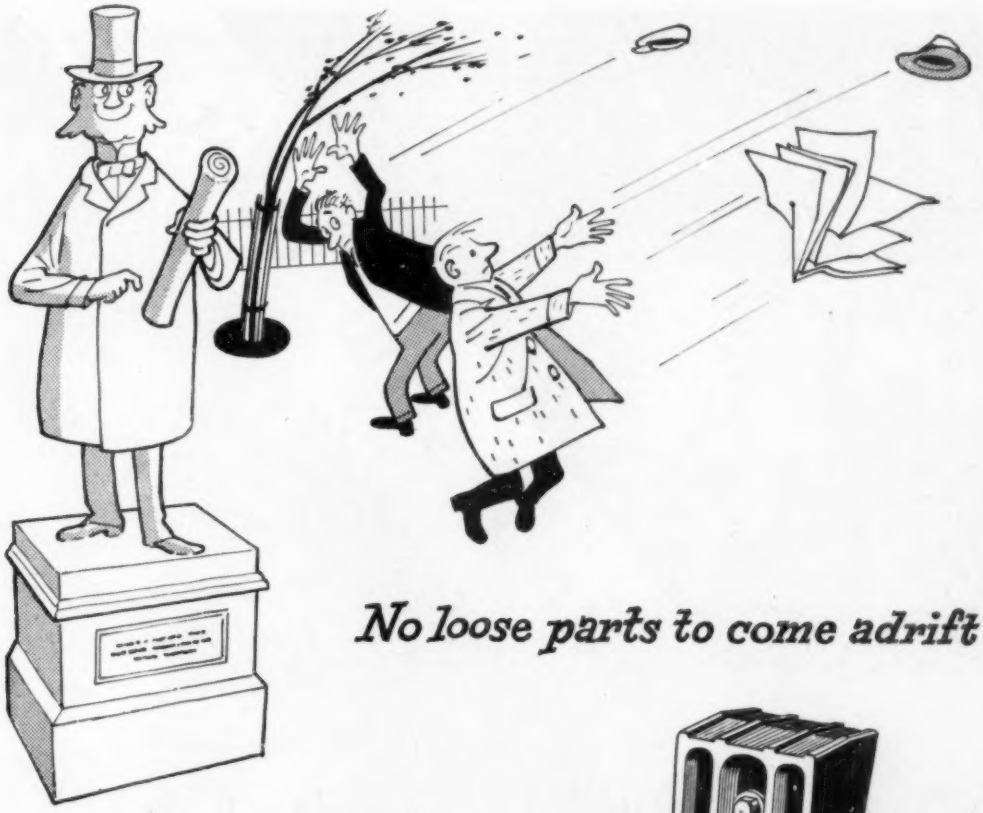

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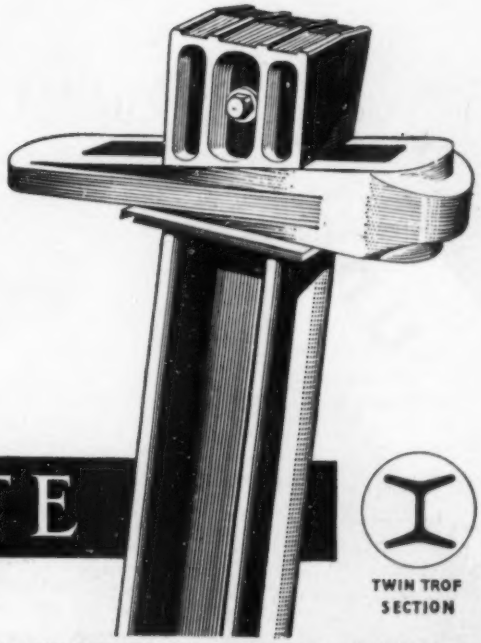

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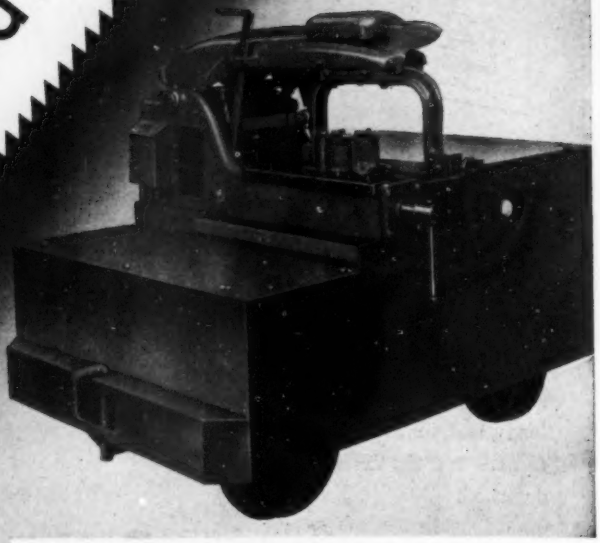

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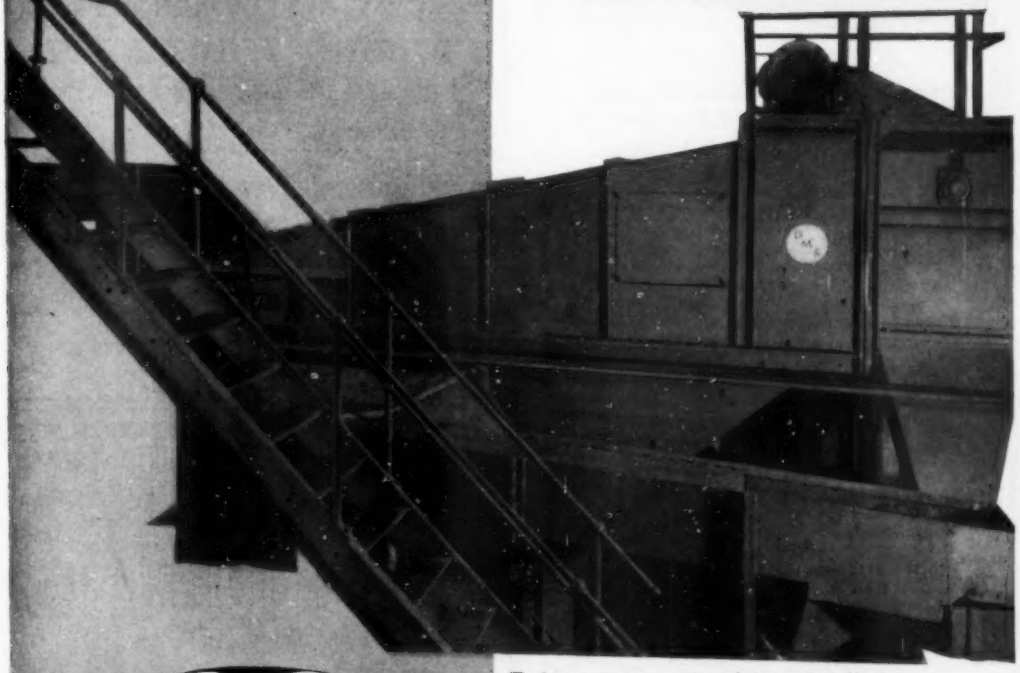

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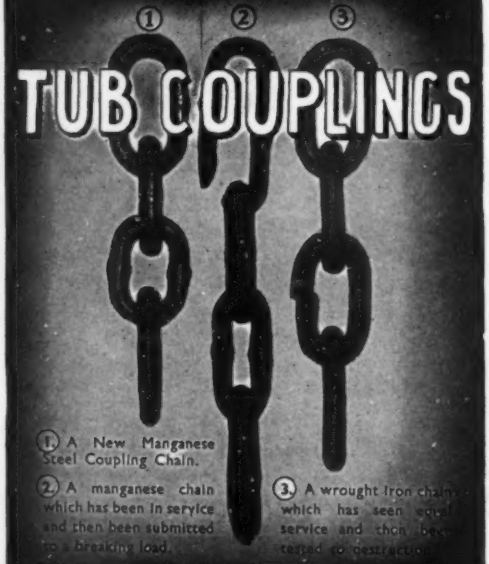

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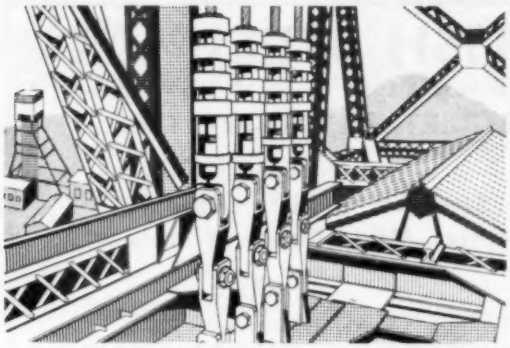

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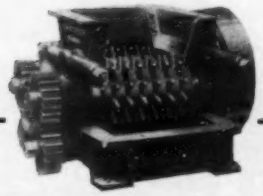

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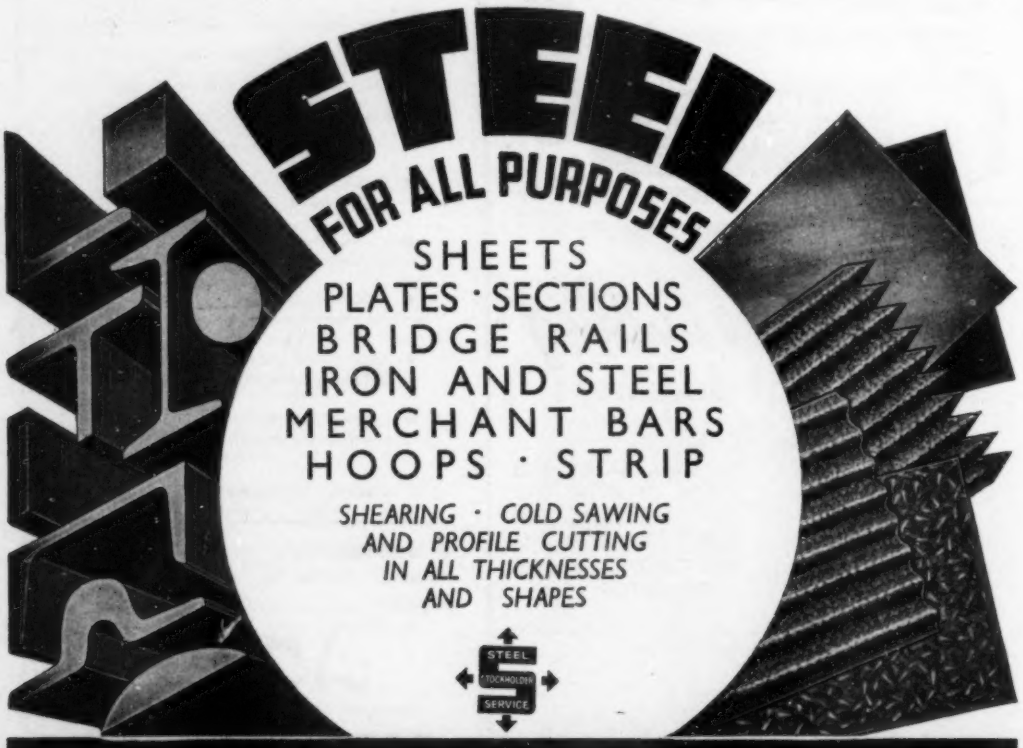

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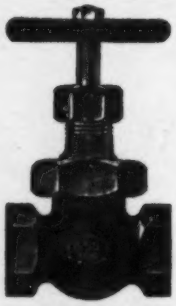

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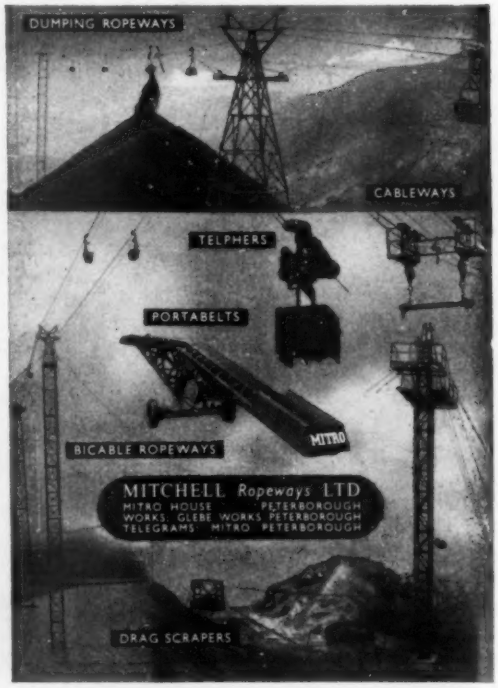

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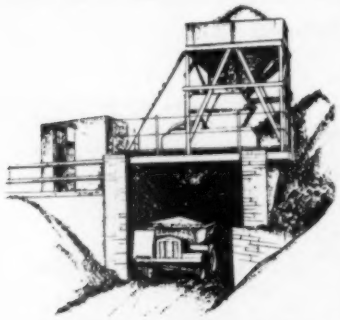

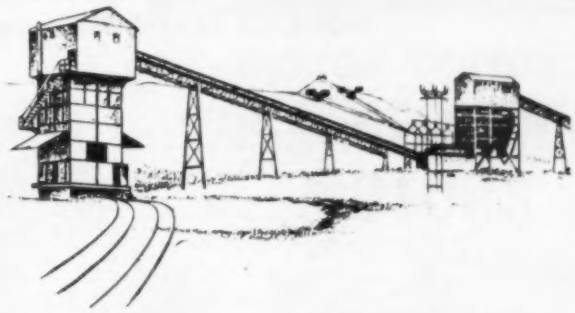

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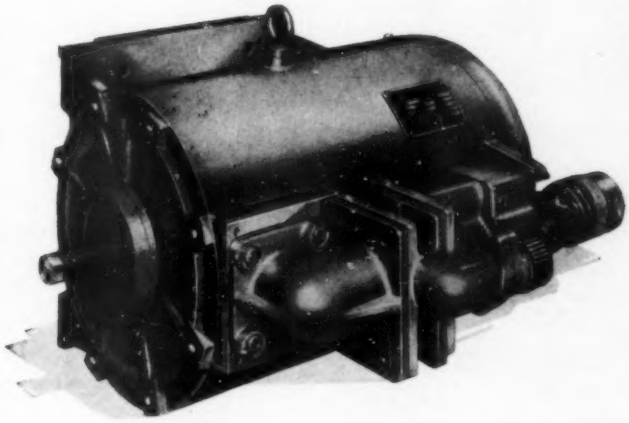

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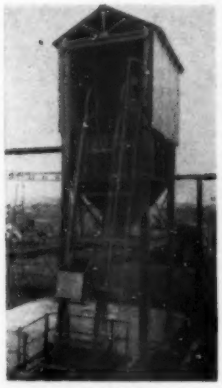

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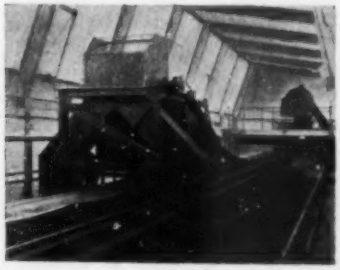

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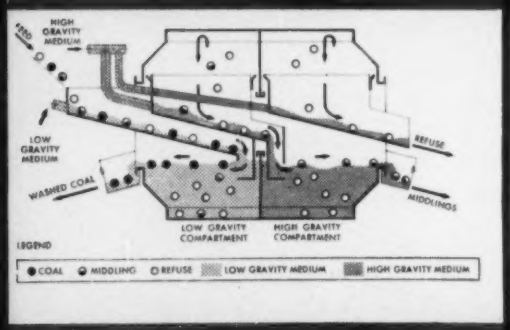

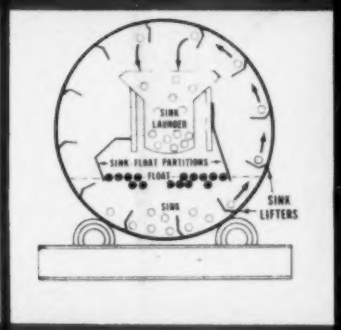

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